MARCH 16, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

Lifting the Lid on
INDUSTRIAL ELECTRONICS

Closing the gap between theoretical possibilities and industrial usage is the major problem—p. 96

PREMIUMS FOR STEEL
Automakers Pay Extra, p. 71

BLAST FURNACE STILL VIRILE
Challenged but Champion, p. 110

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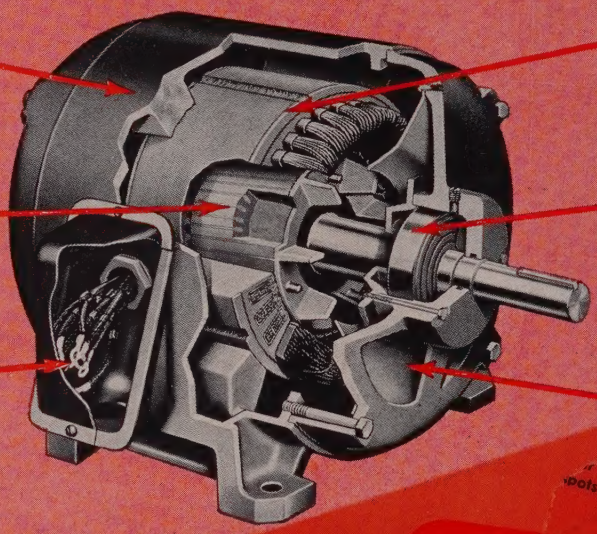
Look for These 6 Signs of Good Motor Design



1

FRAME — Rigid cast iron. Designed to hold bearing alignment, resist corrosion, prevent distortion under any normal operating condition.

2

ROTOR — Die cast aluminum for maximum strength. Practically indestructible in service.

3

CONDUIT BOX — Provides plenty of room to connect leads. Adjustable to any position. Long leads make connection easy.

4

STATOR — Multiple-dipped, baked after every dip. Builds up tough protection against heat, moisture, corrosion.

5

BEARINGS — Double shielded with provision for in-service lubrication if desired. Will run for long periods without attention but can be greased if conditions demand it. Thoroughly protected against outside dirt.

6

VENTILATION — Drip-proof ... plenty of internal ... lation to prevent hot ...

Get Allis-Chalmers Motors for these Extra Values!

ALLIS-CHALMERS MOTORS

Certified Service — Nearly 100 Allis-Chalmers Certified Service Shops provide factory-approved parts and service on your Allis-Chalmers motors. Screened for modern equipment, adequate experience and business integrity, these independently owned service shops will provide you with prompt, economical repair and maintenance.

Complete Drives from One Source — Allis-Chalmers can supply your complete drive — motor, control and *Texrope* V-belt drive — from one convenient, reliable source.

Application Engineering — Your Allis-Chalmers District Office representative or Authorized Dealer will be glad to help you select exactly the right motors for your needs. For additional information, write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B6052. A-3954

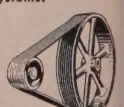
Texrope is an Allis-Chalmers trademark.

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Distributors, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE V-belts in all sizes and sections, standard and *Vari-Pitch* sheaves, speed changers.



PUMPS — Integra... types from ¾ in... to 72 in. discharg... and up.

ALLIS-CHALMERS

Five of the seven transmitting towers on Mount Wilson were erected with structural steel sections rolled by Bethlehem Pacific.

World's Greatest Concentration of TV Transmission Towers

This forest of television towers has grown atop Southern California's Mount Wilson, some 6000 feet above sea level. Used by seven different stations in Greater Los Angeles, the towers broadcast video programs over an area of 10,000 square miles. This means they are within receiving range of more than 5,000,000 people.

The unusually high elevation of these towers has added considerable distance to the effective transmitting range of the Los Angeles stations. And their concentration on one mountain top has simplified the tuning problems for the vast television audience of the region.

The towers are, of course, made of steel. No other material would be practical for building structures of this height, with the strength and rigidity required for television transmission. Five of these seven towers were erected with structural steel rolled by Bethlehem Pacific.

This company, with its three structural-steel rolling mills, its four fabricating works, and its erection facilities, is handling steelwork for almost every kind of industry located west of the Rockies.

BETHLEHEM PACIFIC COAST STEEL CORPORATION

Steelmaking Plants: Los Angeles, South San Francisco, Seattle

Structural Fabricating Works: Los Angeles, South San Francisco, Alameda, Seattle

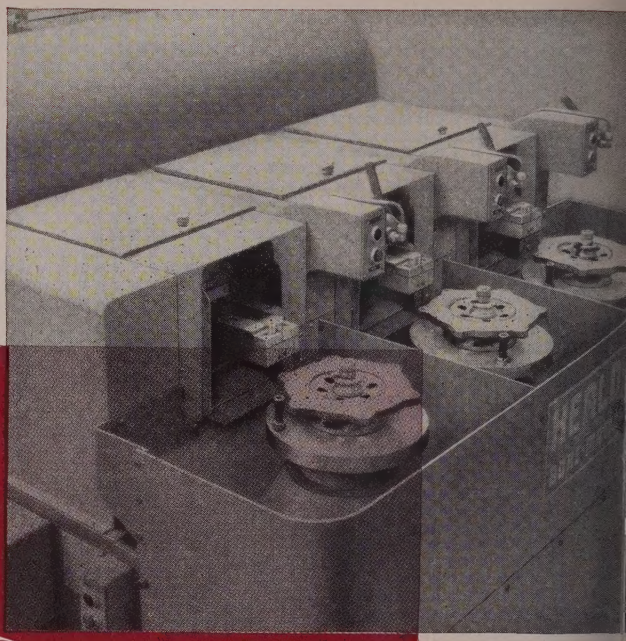
BETHLEHEM PACIFIC

BETHLEHEM STEEL

3-in-1 vertical spindle Bore-Matic

permits

CONTINUOUS CLUTCH PLATE PRODUCTION



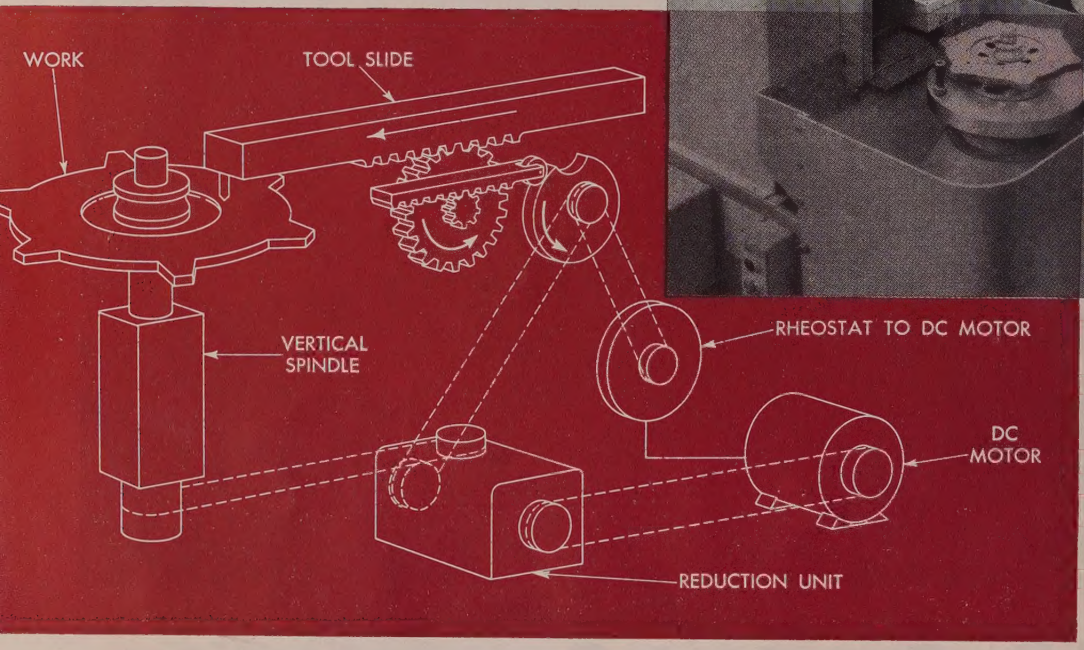


Diagram at left illu cam slide arrangemen on each of the thre tions of the Heald 243 Bore-Matic shown In addition to con tool slide feed rat also progressively in rotational speed of tool travels from out inside diameter of resulting in constar face feet per minut

Cam operated tool slides give constant surface feet per minute for entire facing operation

■ With this three-station, model 243 vertical Bore-Matic, automotive clutch plates are precision faced on a non-stop schedule. Each station operates independently. Parts can be loaded and unloaded on one station while the others are in operation. Machine features convenient work height, pneumatic clamping and push-button controls.

To provide constant surface feet per minute, the cam-operated tool slides are arranged for positive, synchronized control of both tool feed rate and rotational speed of the work. This arrangement, shown in the diagram above, assures a consistent, uniform fi h over the entire borized surface of the plate.

Tools are easily adjusted by means of index mar screws on the top of the tool blocks. Rotating, air-opera d "C" clamp fixtures are mounted on extended vertical-s dle boringheads. Fixture clamp levers are adjacent to e h push-button station for ease and convenience of con l.

Remember — when it comes to precision finishing it pays to come to Heald.

HEALD

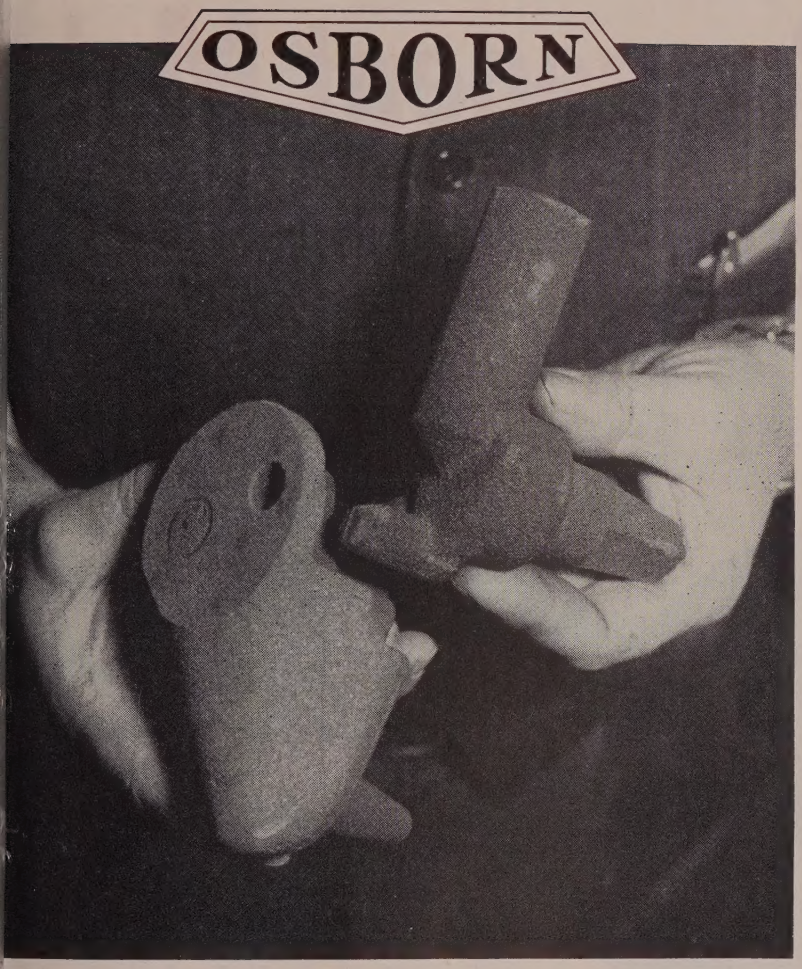
INTERNAL AND ROTARY SURFACE GRINDING MACHINES AND BORE-MATICS

THE HEALD MACHINE COMPAN

WORCESTER 6, MASSACHUSETTS

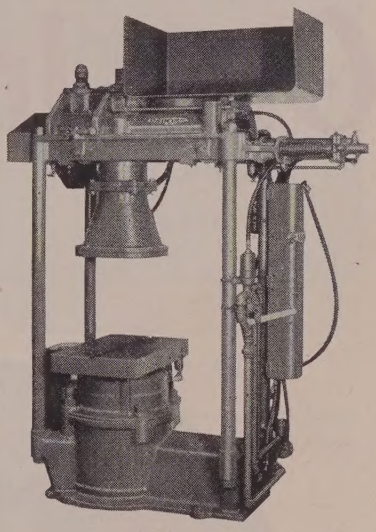
Branch Offices: Chicago • Cleveland • Dayton • Detroit • Indianapolis • New

Case Study
No. 2235—96 in
PRECISION PRODUCTION



BLOWS CORES AUTOMATICALLY

at the push of a button



Osborn Core Blower Machines make cores faster, better, and at less cost. Many machines are equipped with complete automatic controls . . . assure you dependable production per manhour.

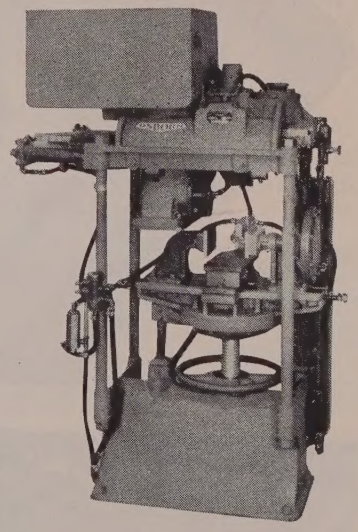
LOOK AT YOUR CORES

THINK of them as an important element in manufacturing costs of quality castings.

Core costs in many castings are substantially greater than the cost of the mold itself. Blown cores help keep manufacturing costs at a minimum.

Osborn Core Blowing Machines with manual or automatic controls give an increased production with minimum manpower. Casting scrap attributed to cores is reduced because of improved accuracy and uniformity of blown cores.

Request an Osborn Factory Trained Field Engineer to visit your foundry, analyze your requirements and recommend ways of cutting core costs. Write *The Osborn Manufacturing Company, Dept. EE-3, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



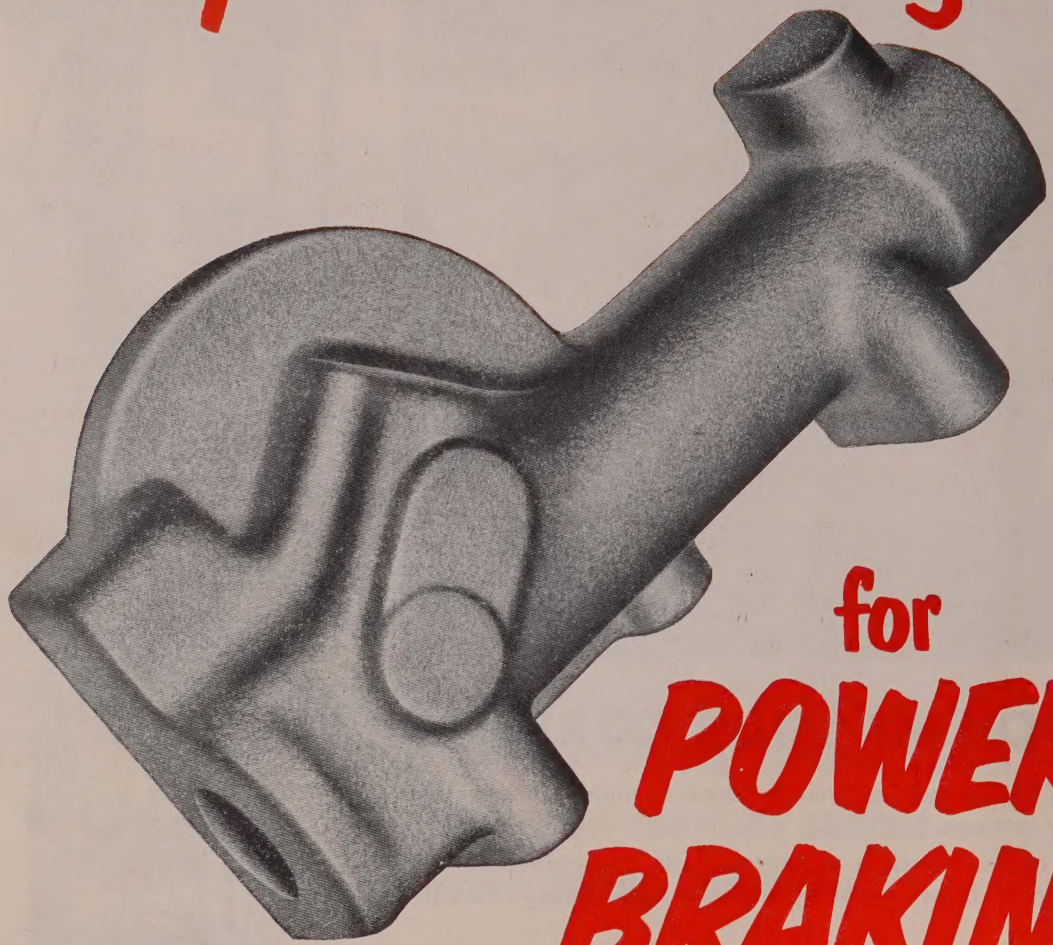
Osborn Core Blower equipped with automatic controls, horizontal clamps, and core box ejector for removing blown core box after cycle is completed.

Serving the Foundry Industry for Over 43 Years

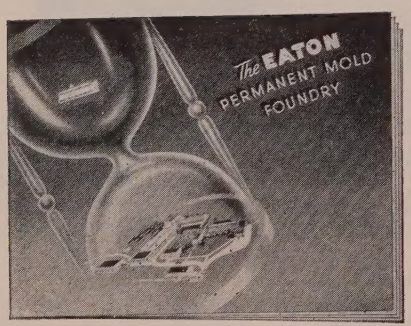
Osborn Molding Machines

MOLDING MACHINES . . . CORE BLOWING MACHINES . . . INDUSTRIAL BRUSHES

Eaton Permanent Mold Gray Iron Castings—



for POWER BRAKING



Send for your free copy of the 32-page illustrated booklet: "The Eaton Permanent Mold Foundry." It tells the story of Permanent Mold Castings and takes you on a picture-tour of the Eaton Foundry at Vassar, Michigan.

EATON MANUFACTURING COMPANY
General Offices: CLEVELAND, OHIO
FOUNDRY DIVISION: 9771 FRENCH ROAD • DETROIT 13, MICHIGAN

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

This Week in Metalworking

STEEL

Vol. 132 No. 11 Mar. 16, 1953

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PLA-TANK® DUCTS

are the answer where corrosion is a problem

PLA-TANK DUCTS

are manufactured from long-life resin-bonded glass fiber.

PLA-TANK DUCTS

are resistant to a wide variety of fumes.

PLA-TANK DUCTS

are resistant, inside and out, at temperatures from -60° F. to 280° F.

PLA-TANK DUCTS

are competitively priced with other corrosion-resistant materials.

PLA-TANK DUCTS

are available now in standard 6"—54", as well as rectangular and custom-built shapes, including hoods.

PLA-TANK DUCTS

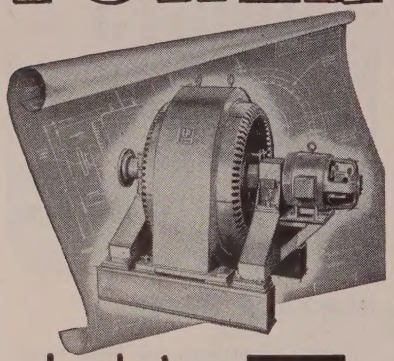
are the answer to your needs for many fume exhaust jobs now on your drawing boards —or for replacements in existing systems.

Write for free data file sheet

THE Chemical CORPORATION

56 Waltham Ave., Springfield 9, Mass.

for
custom-engineered
POWER



look to... EP

Since 1909, the job of The Electric Products Company has been to create and develop special electrical rotating equipment . . . motors and generators to do existing jobs better or to reach into new fields to do jobs that couldn't be done before. The natural "by-product" of our more than 40 years of specialization is that you get equipment designed and built to the exact requirements of your application . . . equipment that has greater dependability, longer life and that requires less maintenance.

Send in the coupon below for detailed information about our Custom-Engineered synchronous motors and generators . . . d-c motors and generators . . . induction motors . . . battery chargers . . . frequency changers.

A nation-wide sales engineering and service organization stands ready to meet all User requirements.

THE ELECTRIC
PRODUCTS COMPANY

1720 CLARKSTONE ROAD
CLEVELAND 12, OHIO

Attach coupon to your letterhead for your copy of Bulletin 2-200.

NAME_____
TITLE_____
COMPANY_____
STREET_____
CITY_____ ZONE____ STATE_____
X-74

Behind the Scenes...

Putting Starch In STEEL

You've probably asked yourself from time to time how Dr. George Gallup can run his public opinion research business and come up with the right answers and yet you don't know a soul who's ever been interviewed by a Gallup reporter. Well, it's true that the pollsters work on a very small "sample", as the researchers call it, and the chances of your being a part of the sample are very slight. What it means is that they slice out a sliver from the whole pie and by examining this little chunk closely enough they can say without too many reservations what the whole pie is like.

The reason we're off onto this subject at the moment is that you may be called on one of these days by a young (we hope) lady who will announce the fact that she is with Daniel Starch & Staff of Mamaroneck, N. Y. and would you mind giving her a few minutes of your time.

You see, STEEL is now being "Starched", as they call it in the advertising fraternity, and it is a very interesting procedure. About a week to ten days after the issue date, Starch interviewers throughout the country call on a selected cross-section of STEEL readers. After the interviewer has established the fact that you have read the issue in question she leafs through it page by page to find out which advertisements you recall having seen and read. She also checks on a number of the editorial features and articles and through a tricky shorthand system she is able to keep up with your answers and remarks as fast as you can talk. Chances are it will still take a half-hour to an hour to complete the interview and into the home office will go your report. These are all punched up on tabulating cards and then the IBM machines go to work and out comes a very elaborate report showing just how well the various advertisements fared in that issue. These reports are sold to advertisers and advertising agencies who study them in detail in order to keep on making future advertisements more interesting and effective. The editors of STEEL get a confidential report on the interest shown in the editorial articles for that issue to help them in their continuing job of making STEEL of the greatest possible value to you every week.

Traveling Editors

February for some reason is one of the slower months but brother the editors are off again in March to cover the country and keep you up on what's going on. Editor Irwin Such is touring the west coast and taking in the Western Metal Show at the moment. Managing editor, Walt Campbell is taking in two SAE meetings this month, and Machine Tool editor Bob Huber is heading for the ASTE meeting in Detroit. Engineering Editor Ed Karpick covered the Foundry Educational Foundation, and Technical Editor Al Gray is out in Chicago at the meeting of the Corrosion Engineers. Assistant Managing Editor John Morgan will cover the Pressed Metal Institute a little later this month and Sam Baker will head down to Washington for the Magnesium Association Exposition. It is any wonder that you get so darned much information in this paper?

Special Report Popular

One of the nicest letters that came in commenting on Floyd Lawrence's Special Report on Public and Community Relations was from P. Z. Kistler, Director of Organization, New York Wire Cloth Co., York, Pa. Apparently York has done some very interesting things in community relations through the Manufacturer's Association there over the last six years and Floyd's article was right down their alley. Fortunately we still have some reprints of this report and are able to send Mr. Kistler the 250 copies he wanted for the various members of the Association.

Train Problem

The correct answer on the train problem is 47. You'd pass one when you are out of Grand Central a half-hour and one every half hour all the way to Chicago.

Shrdlu

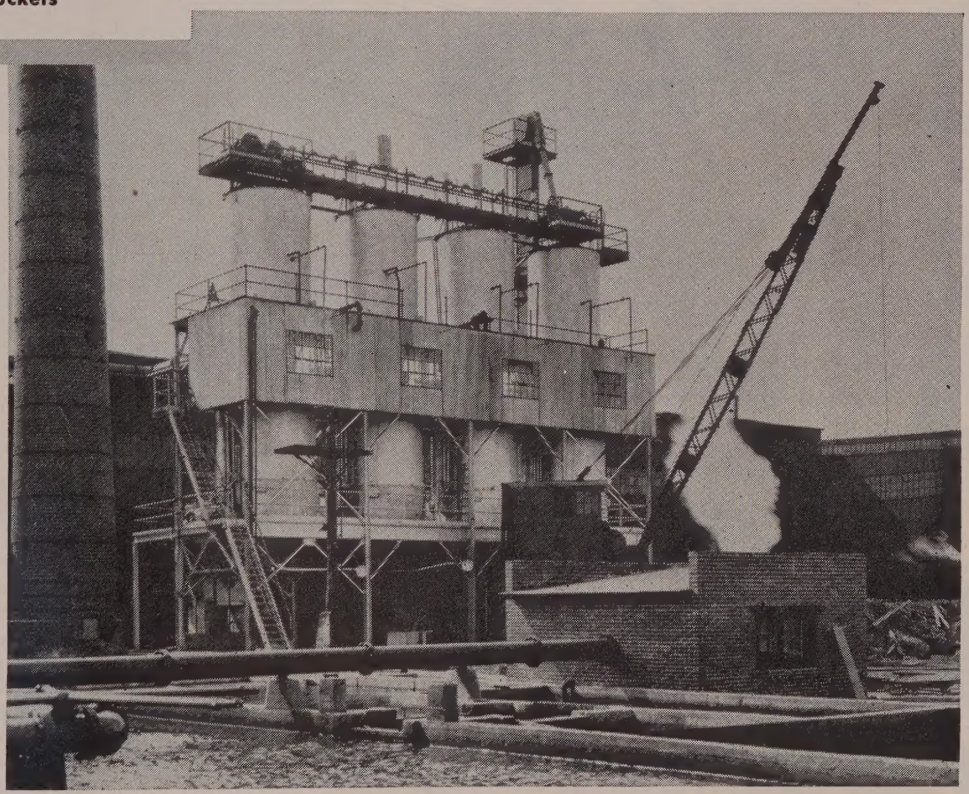
(Metalworking Outlook—Page 59)

Wellman will build it

Special Cranes
Gas Producer Plants
Charging Machines
Forging Manipulators
Car Dumpers
Gas Flue Systems
Gas Reversing Valves
Coke Pushers
Mine Hoists
Skip Hoists
Ore Bridges
Clamshell Buckets

Wellman-Galusha Clean Gas Generators

Built exclusively by Wellman... for efficient, economical results



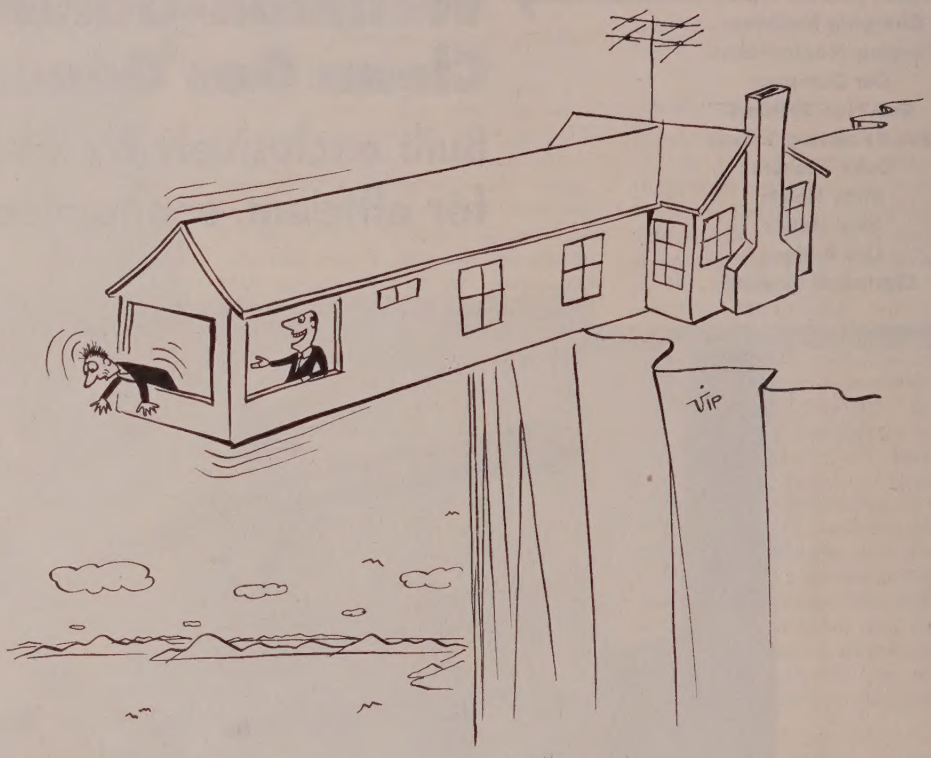
...ur Wellman-Galusha ...lean Gas Generators ...pplying fuel for steel ...ill furnaces.

● Only Wellman builds the Galusha Clean Gas Generators that so ideally meet your requirements with efficiency and economy. These generators combine, in a *complete* machine, the rotary grates, ample fuel storage bin, and provisions for generating the steam required for making the gas. Even the lowest-priced grades of Anthracite and coke can be satisfactorily gasified. You can depend on *all* Wellman equipment!

THE WELLMAN ENGINEERING COMPANY

7000 CENTRAL AVENUE · CLEVELAND 4, OHIO

What's Screwy? by Phillips



"Don't let it worry you. Everything is made fast with Phillips Cross-Recessed-Head Screws."

PERFECTLY MATED! Only Phillips Drivers are perfectly mated to Phillips Screws. Look for the name Phillips on the shank.

VIBRATION RESISTANCE because of added structural strength is only one of the exclusive advantages gained by using Phillips Screws. These screws set up tighter and their distinctive design gives them maximum strength of head. And that's not all. Because they are unusually easy to drive, they cut driving time up to 50%, eliminate driver skids and split screw heads. You save time, work, money when you use Phillips Screws — Wood, Machine, Tapping Screws or "Sems."

PHILLIPS *Cross-Recessed-Head* SCREWS

X marks the spot... the mark of extra quality

AMERICAN SCREW COMPANY • ATLANTIC SCREW WORKS, INC. • THE BLAKE & JOHNSON CO.
CENTRAL SCREW COMPANY • CONTINENTAL SCREW COMPANY • THE EAGLE LOCK COMPANY
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THE LAMSON & SESSIONS COMPANY • NATIONAL LOCK COMPANY
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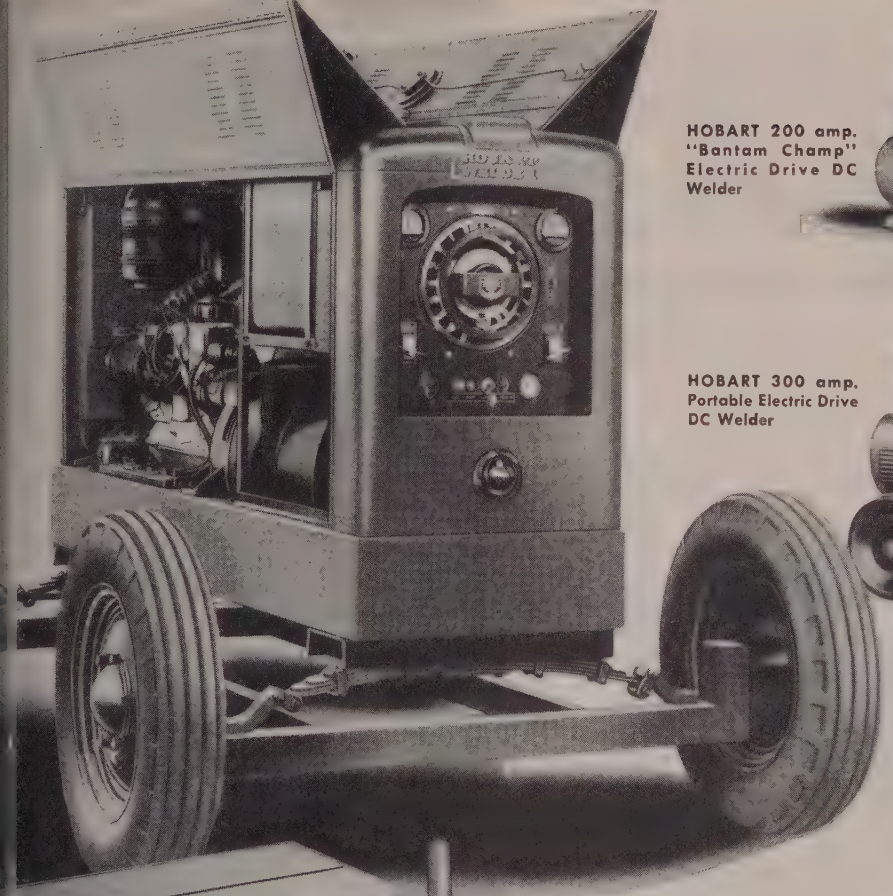
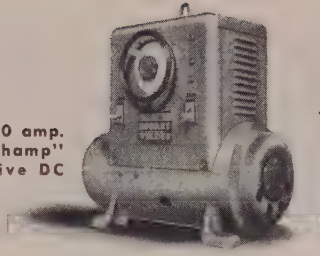
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.
SHAKEPROOF DIV. OF ILLINOIS TOOL WORKS • THE SOUTHINGTON HDWE. MFG. COMPANY
STERLING BOLT COMPANY • STRONGHOLD SCREW PRODUCTS, INC. • WALES-BEECH CORP.

TODAY'S...AND THE FUTURE'S...FINEST FASTENER

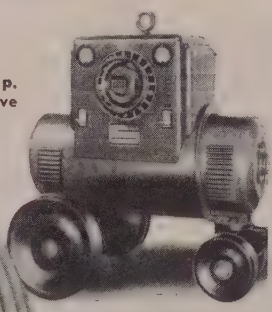
HOBART ARC WELDERS

TROY, OHIO • "ONE OF THE WORLD'S LARGEST MANUFACTURERS OF ARC WELDERS" • BOX ST-33



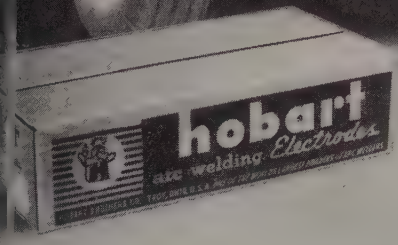


HOBART 200 amp. "Bantam Champ" Electric Drive DC Welder



HOBART 300 amp. Portable Electric Drive DC Welder

HOBART 300 amp. Gas Engine Drive DC Welder



There's only ONE foolproof way to select a welder...

. . . and that's by comparing one machine point-for-point against all others on the market. It's scientific . . . it's cold-blooded . . . but it's the only sure way.

We invite you to make such a comparison with a Hobart Welder. We want you to see for yourself, firsthand, why a Hobart with its advanced engineering and rugged, heavy duty construction is best able to offer you the lower costs and constant performance so essential to profitable production welding—to understand why Hobart has long been the favorite of the country's leading welding operators.

Such a comparison is all the proof you'll need. Why not make it now? Mail coupon today for complete information.

It's easier to weld it right with HOBART ELECTRODES

Whatever your particular welding problem may be, it will pay you to investigate Hobart Electrodes. Made in a full range of types and sizes, they assure you better, easier, lower cost welds on all types of work. Check coupon today for full details.

Hobart Brothers Company
Box ST-33, Troy, Ohio

HOBART BROTHERS CO., BOX ST-33 TROY, O.

• **Without obligation, send information on items checked below:**

☐ Electric Drive Welder ☐ Gas Drive Welder ☐ Pipeliner Welder ☐ Bantam Champ Welder. Send me ☐ Welder Catalog ☐ Electrode Catalog ☐ Accessory Catalog.

FREE

☐ "HOW TO GET BETTER WELDS." Valuable new vest pocket booklet.

NAME_____ POSITION_____

FIRM_____

ADDRESS_____

NONE BETTER... America's First and Safest

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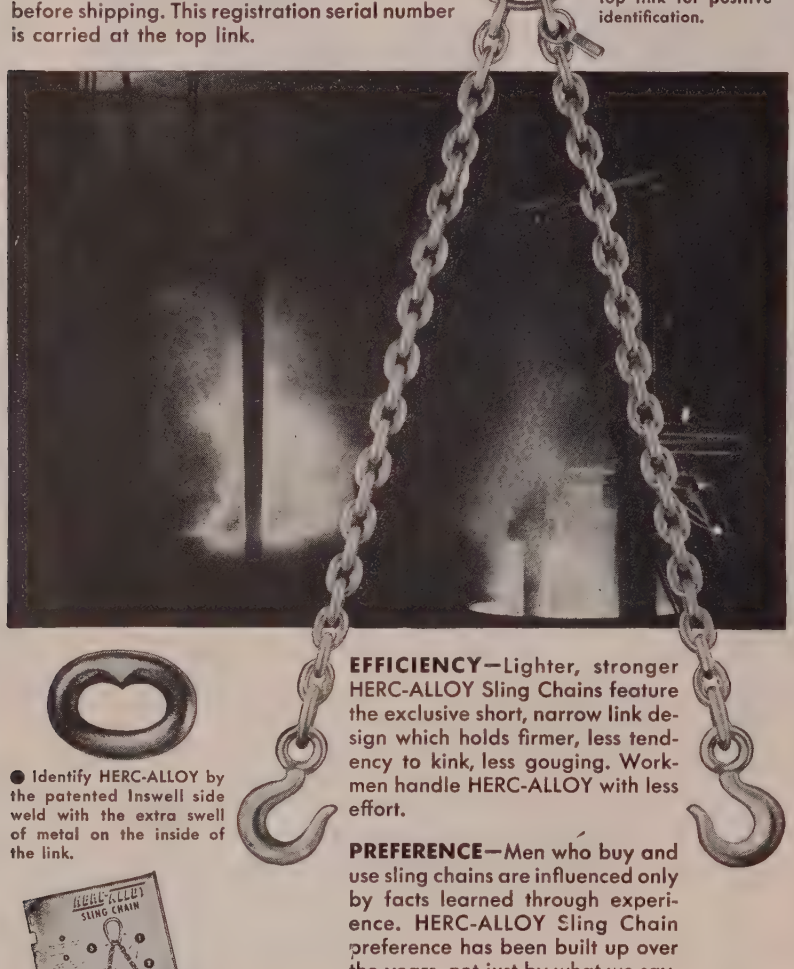
SLING CHAINS

STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.



● Identify HERC-ALLOY by the patented Inswell side weld with the extra swell of metal on the inside of the link.

EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

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(Affiliated with Chisholm-Moore Hoist Corp.)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: **New York • Chicago • Cleveland**

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., and Johannesburg, South Africa.

"See us at Booth No. 1526—Philadelphia—May 18-22
5TH NATIONAL MATERIAL HANDLING EXPOSITION"

LETTERS
TO THE EDITORS

P.R.: All Industry's Job

Over the years your editorials in STEEL have given me a lot of ideas, and I have enjoyed them.

The one entitled "P. R. Is Every Company's Job," in your Feb. 23 issue (p. 41), ought to be read by every company executive, and if you could supply us with about 50 reprints, we would like to distribute them to the key people among our clients.

N. E. Malone
Norman Malone & Associates
Akron, O.

You are quite right in bearing down on the importance of our public relations as between industry and the public in your editorial "P. R. Is Every Company's Job." There is one point, however, that requires much more emphasis, and that has to do with prices. If industry, labor and agriculture grab this present opportunity to bust prices a little or a lot not justified by absolute dire necessity every labor leader, every New Dealer Fair Dealer or what have you will rise up in righteous indignation to say that the only public relations that industry has is to gouge at the very first opportunity.

The point is that we must not let the public get the idea that this business of competitive private enterprise means only increased prices. The greatest thing that could happen to the U. S. and to all of the business in it for now and the future would be for all industry either to stabilize or reduce prices and prove to the world that the maintenance of the American way is more important than a few dollars of extra profit.

C. A. Norgren, president
C. A. Norgren Co.
Englewood, Colo.

More Help for Cutting Tool Life

We noted in the "Letters to the Editors" column of the Jan. 19 issue of STEEL (p. 10) that one of your readers wanted to know whom to contact for further information on blasting with 5000 mesh grit to lengthen cutting tool life. Your answer referred him to the Cro-Plate Co. Inc.

We also manufacture this type of equipment.

E. F. Anderson
American Wheelabrator & Equipment Corp.
Mishawaka, Ind.

What Is Free Enterprise?

Isn't the definition for "free enterprise" about due for an overhaul? Certainly it is no fundamental agai which man can plot modern economic life. Rather has it become a retreat obfuscation into which our less hon political and industrial leadership tires when it cannot rationalize c tradictory actions so often at o with its public utterances.

To help make more difficult clear cut analysis of our econo mosaic, we now have Bill S-869 (STE Feb. 16, p. 35) proposed for the creat

Continued on following page

Warner & Swasey 5-Spindle Automatic ays for itself in one year's operation!

THIS STORY comes from the production-minded Eureka-Williams Corporation of omington, Ill. Shooting for greater produc-, they installed a Warner & Swasey 5-Spindle omatic Chucking Machine to machine the iron valve discs used in their oil burners.

he first month's production records showed machine had more than lived up to expecta-s. During the month, the machine turned out any parts as seven hand-operated machines! l it reduced the machining cost on the parts ⅔. Records for subsequent months showed n increased savings—and that the machine actually paid for itself in the first year's operation!

Eureka-Williams has found that the 5-Spindle Automatic is quick and easy to set up, that operators like the machine, that it has provided them the dependable, high precision operation you can expect from any Warner & Swasey.

Certain jobs in your shop—even small and medium lot runs—can undoubtedly be machined faster, more uniformly, and at lower cost on Warner & Swasey Automatics. Your nearest Warner & Swasey Field Representative will be glad to show you exactly how an automatic can improve *your* operations.

CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

TOUGH JOBS made easy

At American Steel Foundries' plant in Newark, New Jersey, inspection of heavy steel castings is made easy by Westinghouse Industrial X-ray equipment. Reason: extreme *flexibility*.

1 Thick *or* thin materials take less time to radiograph. Westinghouse *Constant Potential* high voltage generator produces more X-rays per KV and does it over the 30-250 KV range.

2 Less time required for positioning. Jib crane tubestand carries tubehead 6′ vertically above a minimum 33″ target-floor distance and 10′ horizontally while moving approximately 270° around vertical column. Additional angulation built in.

Westinghouse assures you the finest, most flexible X-ray tools for your inspection jobs *plus* a coast-to-coast staff of technical experts. Call your Westinghouse X-ray representative or write Westinghouse Electric Corporation, 2519 Wilkens Avenue, Baltimore 3, Maryland.

WESTINGHOUSE 250 KV JIB CRANE UNIT

J-08264

YOU CAN BE SURE...IF IT'S

Westinghouse

LETTERS

Concluded from preceding page

of funds for mining subsidies. Priv business seeking consummation of its jectives by the use of a classically f market would abjure government pr or planning of this sort. It would on a demand strong enough to lift pri to a level attractive enough for m ginal suppliers.

That our country does not, and p haps never again will, operate wi in the sharply outlined framework of laws of supply and demand, is rec nized by many, but admitted by fe The result is a form of intellectual d honesty on a national level.

Louis D'H
purchasing ag
J. W. Greer
Cambridge, Ma

Looking Out for Facts

Thanks very much for your "19 Facts & Figures."

It certainly is a very complete job compiling statistics and is very helpf to me from a marketing point of vie I am constantly in search of statist of this kind to help me in setting marketing potentials.

Frank P. Minn
market research mana
Yale & Towne Mfg.
Philadelphia Divis
Philadelp

Handbook Rates Tops

Just wanted to express my great s isfaction in having a copy of Specifications Handbook as I think it one of the finest things that has b done for anyone in the metalwork industry. It is especially valuable t steel buyer in these days when you c not always be sure just what alloy can obtain. We continually have make substitutions.

At any rate, I want to congratul STEEL on putting out such a valua book.

H. S. Tu
Nash-Kelvinator C
De

We thank you for the copy STEEL's Specifications Handbook. was turned over to our purchasing partment. We perforate and fabric all types of metals and receive inqui with government specifications. Th fore the handbook is an excellent re ence.

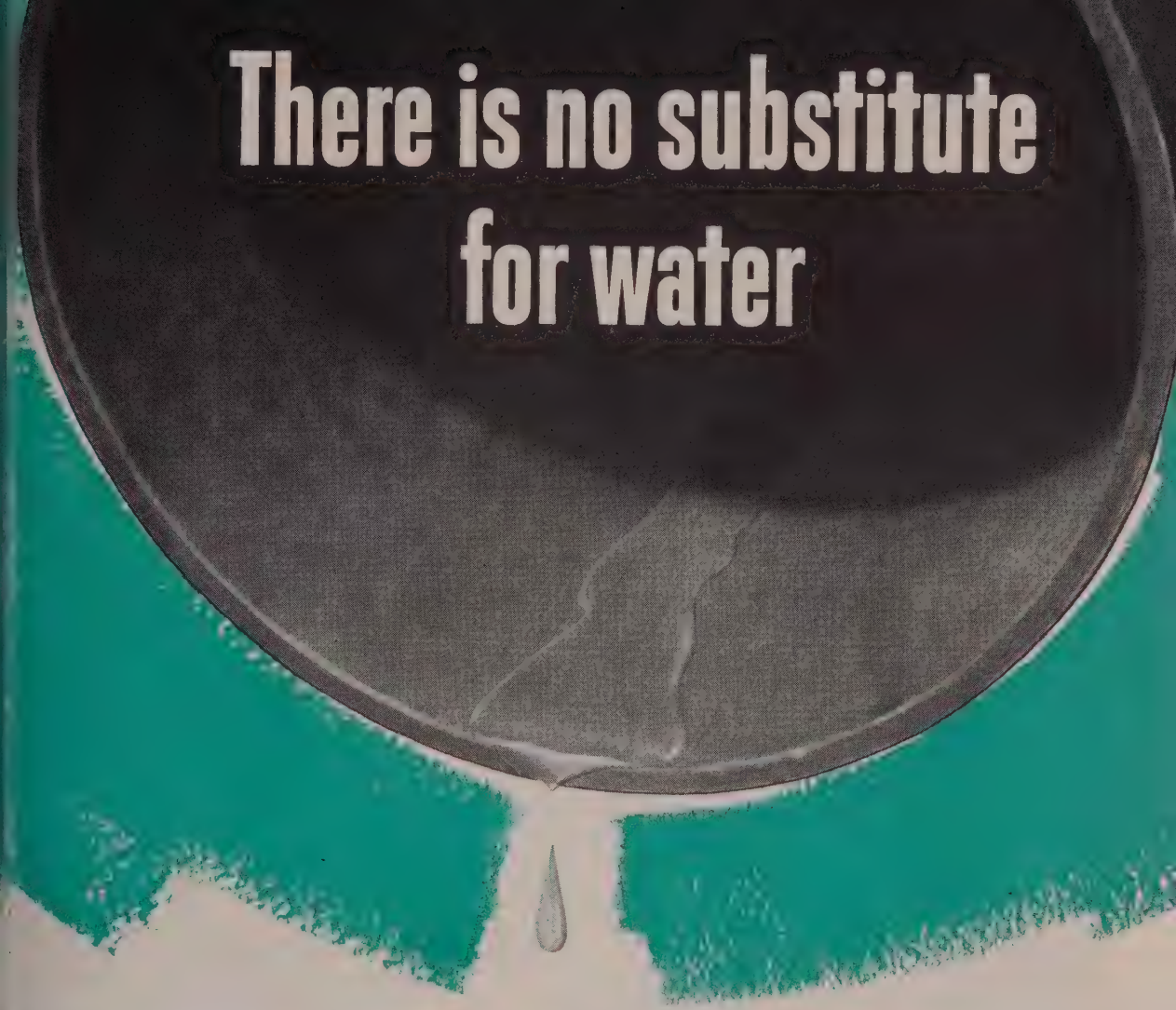
J. J. F
assistant sales man
Hendrick Mfg.
Carbondale,

We have just received our copy of new Specifications Handbook and th you for your prompt attention. book has caused much interest in company . . .

Bert L.
purchasing
Taylor Forge & Pipe Works
Fontana,

Our Mr. MacLellan has received issue of your Specifications Handb which we have read over and stu very closely. We want to congrat you on your service to the steel ind in compiling this data.

P. C. McL
P. C. McDonald
E



. . . and there is no substitute for experienced engineering in developing a dependable water system

Nothing has ever taken the place of water among the basic needs of man. And nothing will ever take the place of safe, sure, *experienced* engineering in developing a dependable water supply.

Layne's reputation as the world's most experienced developer of well water systems was earned by engineering skill every step of the way—from on-the-spot geological surveys to the precision designing of each pump for its particular job. For the best in well water systems, there is no substitute for Layne engineering.

Let Layne engineers help you PLAN AHEAD on your water needs

Layne welcomes the opportunity to share in long-range planning for water-system needs. Contact your nearest Layne Associate Company or write Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

Layne

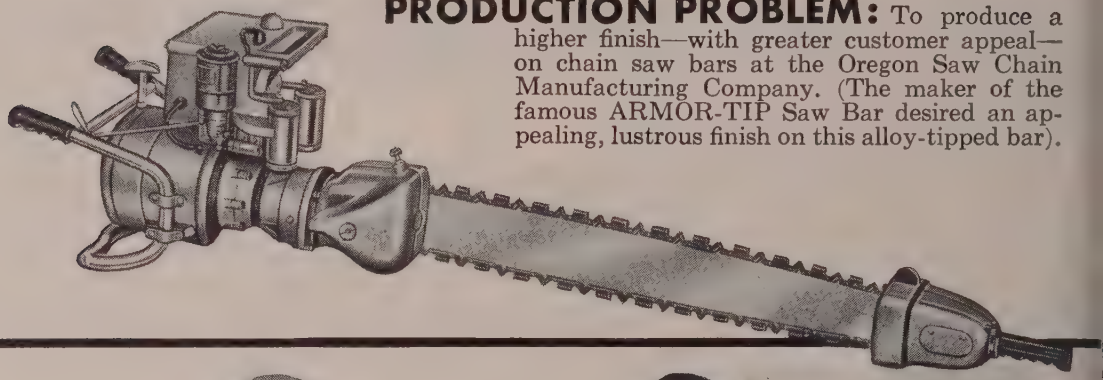
WATER WELLS

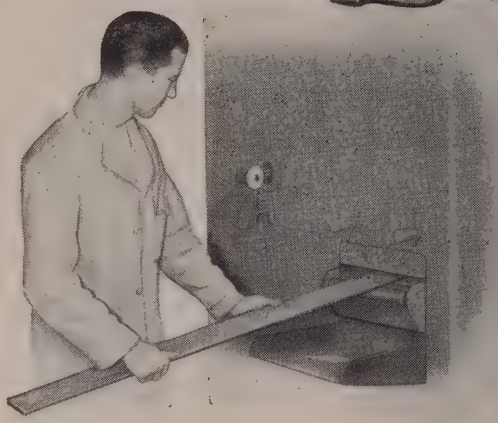
VERTICAL TURBINE PUMPS

Layne Associate Companies Throughout the World

HOW WOULD YOU SOLVE IT?

PRODUCTION PROBLEM: To produce a higher finish—with greater customer appeal—on chain saw bars at the Oregon Saw Chain Manufacturing Company. (The maker of the famous ARMOR-TIP Saw Bar desired an appealing, lustrous finish on this alloy-tipped bar).

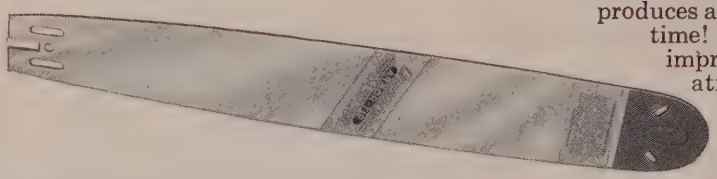




1 A 3M REPRESENTATIVE analyzed the finishing operation and demonstrated how the 3M Backstand Method, using Three-M-ite Cloth Belts, would produce a better finish on the alloy tip than was achieved with a grinding wheel alone.

2 3M ALSO RECOMMENDED the right 3M Abrasive Belt on their Curtis Straight-O-Matic Grinder for final finish on saw bar surface. Previously, manufacturer had used a surface grinder for this operation.

3 NOW, this Portland, Oregon manufacturer produces a finer, more attractive finish in less time! Perhaps a 3M Representative can improve *your* company's finishing operations. His training and experience in industrial application of coated abrasives are available without cost or obligation.



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Minnesota Mining & Mfg. Co.
Dept. ST33, St. Paul 6, Minn.

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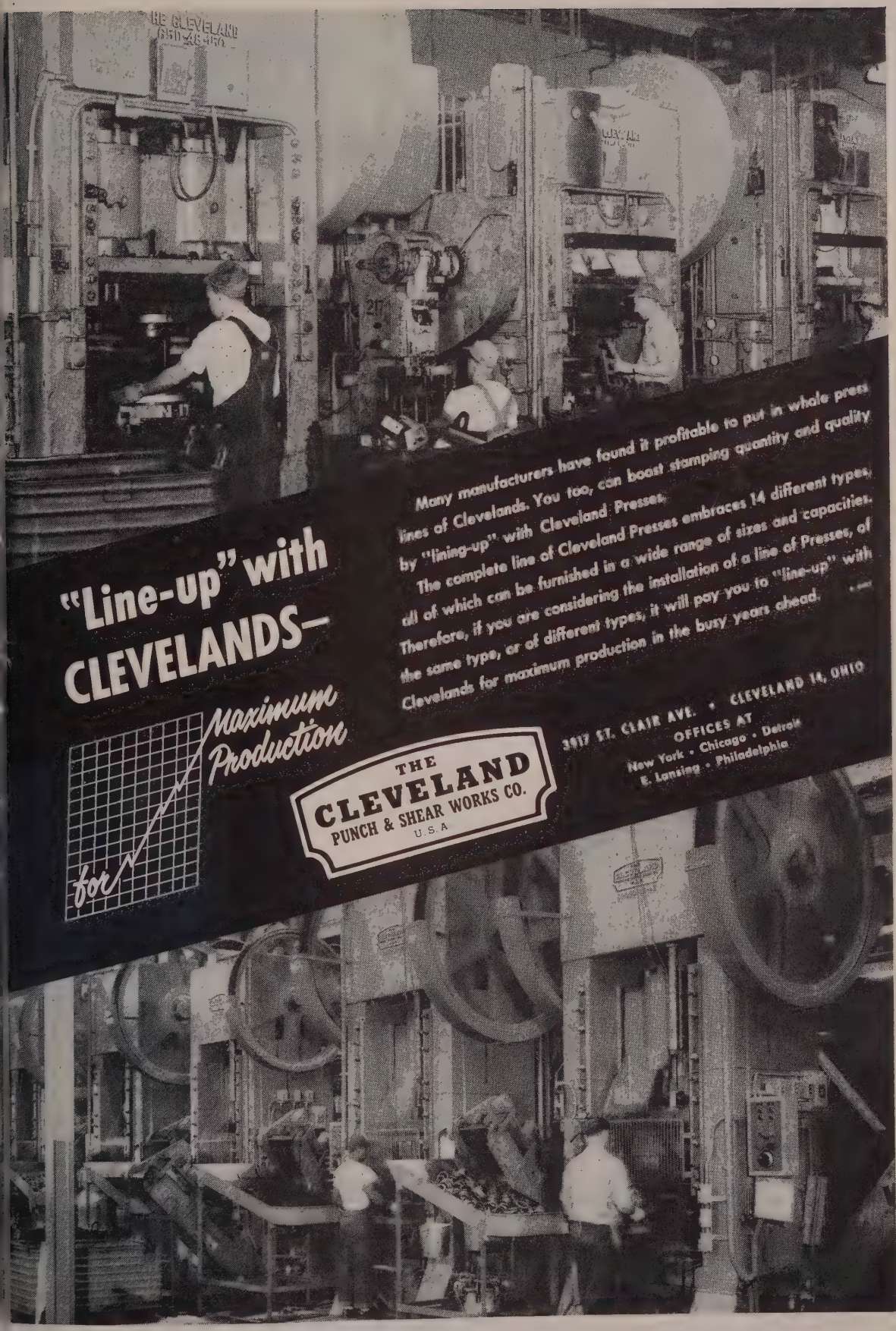
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Modern Metalworking Equipment

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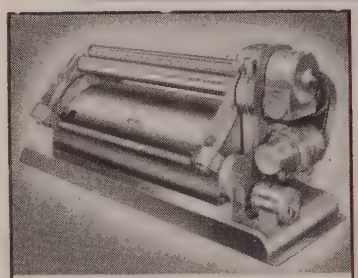
- TURNING ROLLS
- AUTOMATIC WELDING FIXTURES



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- ★ In 18 models, ranging from 3 ft. x 10 ga. to 8 ft. x ¼" in capacity
- ★ Rugged, all steel construction
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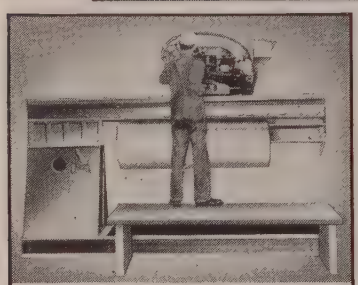
- ★ Durable, special bronze bearings
- ★ Power adjustment & air drop end available on most models



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- ★ In 6 models; capacities up to 9 ft. x ⅜ inch
- ★ In 2 styles for light or heavy shells
- ★ Water-cooled copper weld backing bars
- ★ Positive, rigid, toggle-action clamping
- ★ Track for any automatic welding head

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w facts for your file on

U·S·S CARILLOY STEELS

U·S·S Carilloy T-steel has a yield strength over 90,000 psi., but you can weld it as easily as ordinary carbon steel

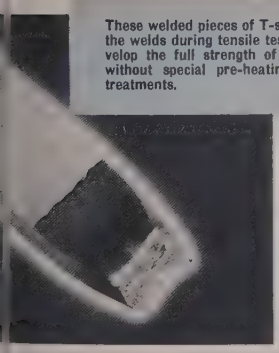
specimen, flame-cut from 1" Carilloy T-1 was chilled to -98°F. and then bent to a full angle. Even though the raw, flame-cut edge e up the outer radius of the bend, there was ign of failure!

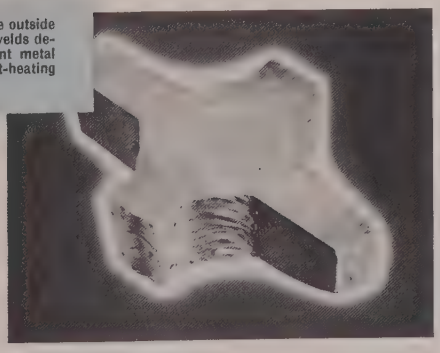
● CARILLOY T-steel is unique. It's a very-high-strength steel that you can weld or flame-cut successfully with ordinary methods used for carbon steel. These operations do *not* lower T-steel's high yield strength. Therefore, you can design to the *full* 90,000 psi. with confidence that parts will retain all of their strength during later fabrication. What's more, T-steel can be readily welded or flame-cut in the field without special pre-heating or stress relieving.

T-steel was designed especially for heavy-duty parts that must operate under rugged service conditions. Despite its high nominal hardness of about 250 Brinell, it has an extremely low transition temperature and remains ductile and tough at the lowest atmospheric temperature. Specimens of T-steel have been flame-cut and then bent to a full 90° angle at –100°F. with no sign of cracking. Other very-high-strength steels would require elaborate and expensive heat-treating to pass such a test.

This remarkable steel is now being used in heavy earth-moving equipment, railroad cars, big water wheel generators, and other equipment that must stand tremendous abuse. In applications where tension is the principal stress, it lets you safely reduce the size and weight of heavily-stressed parts by as much as 50%. Since field welding and flame-cutting are possible, the difficulty and cost of making major repairs is materially reduced.

There are many cases where parts made of T-steel will be less expensive than the steel being used. It will pay you to examine every possible use for it in your equipment. Our experienced metallurgists can give you valuable tips on how and where to use it to best advantage. Just write to United States Steel, Room 2809-L, 525 William Penn Place, Pittsburgh 30, Pennsylvania.





These welded pieces of T-steel broke outside the welds during tensile tests. The welds develop the full strength of the parent metal without special pre-heating or post-heating treatments.

MECHANICAL PROPERTIES OF U·S·S CARILLOY T-1 STEEL

	Thickness	¼" to 2" incl.	Over 2" to 4" incl.	Over 4" to 6" incl.
d Strength .2% Offset (min)		100,000 psi	90,000 psi	90,000 psi
sile Strength (min)		115,000 psi	105,000 psi	105,000 psi
gation in 2", % (min)		18	17	16
luction of Area, % (min)		55	50	45
	Thickness	¼" to ½" incl.	Over ½" to 1" incl.	Over 1" to 2" incl.
d Bend		180° D = 1t	180° D = 2t	180° D = 3t

(Testing in accord with A.S.T.M. recommended practices)

Here's where CARILLOY T-STEEL is now being used

- Tension Rods
- Highly-stressed shovel parts
- Ore-car bottoms
- Pole-end pieces for electrical generators
- Liners for heavy truck bodies
- Dredge buckets
- Wind Tunnel flex plates
- Hammer tie plates
- Bridge thrust plates
- Water wheel generator parts
- Butterfly valve liner plates

USS

UNITED STATES STEEL

UNITED STATES STEEL CORPORATION, PITTSBURGH – COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. – UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

New facts for your file on U·S·S STAINLESS STEEL

This ice cream cabinet, manufactured by Anheuser Busch, Inc., St. Louis, Mo., uses Type 430 Stainless Steel for the cabinet top.

Freezer cabinet tops fabricated from U·S·S 17 (TYPE 430) Stainless Steel

● Here's another successful application of U·S·S 17 (Type 430) Stainless Steel—the grade available today that is best suited for a wide range of fabricating and end use requirements.

Anheuser Busch, Inc., St. Louis, Mo., is using polished sheets of Type 430 Stainless in fabrication of tops for frozen food and ice cream cabinets.

Frames for the glass tops are formed from .031" material, and channel tracks are formed from .050" material. Moldings for the tops are of .025" Type 430 Stainless Steel. Bends of 90° are the most severe formations encountered in making these parts.

After months of experience in such fabrication, Anheuser Busch reports uniformly good results with Type 430 Stainless Steel.

Forming sheets of Type 430 Stainless Steel in manufacture of freezer cabinet tops at Anheuser Busch, Inc.

26-gage sheets of Type 430 Stainless Steel were used in manufacture of this refrigerator case by Zero Plate Company, Fort Worth, Tex. Material was processed by Rigidized Metals Corporation, Buffalo, N.Y.

Rigid-tex Type 430 Stainless Stee used for refrigerator case

● Zero Plate Company of Fort Worth, Tex., is another fabri cator that has taken advantage of the qualities of Type 43 Stainless Steel for current production.

For the reach-in type of refrigerator cases it manufactures Zero Plate Company uses 26-gage sheets of Type 430 Stain less Steel as processed by Rigidized Metals Corporation o Buffalo, N. Y.

Fabricating steps used by Zero Plate Company includ forming, riveting and soldering, and the results — both i fabrication and end use — have been excellent.

Help with your design problems

If you would like to take advantage of available U·S·S 17 (Typ 430) Stainless Steel for your product, our representatives will b glad to make suggestions for easier fabrication and the best en use. There is no obligation. Write to United States Steel Corpora tion, Room 2809-L, 525 William Penn Place, Pittsburgh 30, Pa

USS

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTION

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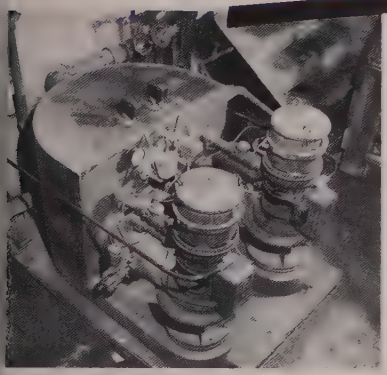
UNITED STATES STEEL

New facts for your file on U·S·S HIGH STRENGTH STEELS



U·S·S COR-TEN corrosion resisting steel builds a complaint-proof tank for vacuum heating pumps

● Built by the Whittington Pump & Engineering Corporation, Indianapolis, Ind., the vacuum tank on this pump is unusual in several respects. Instead of the usual cast iron or plain steel construction this tank is made of welded COR-TEN steel with a yield point of 50,000 psi and having 4 to 6 times the resistance to atmospheric corrosion of mild steel.

How does it stand up in service? Although it is exposed internally to the corrosive attack of hot condensate at elevated temperatures and in a superheated condition, this COR-TEN steel tank has operated with no service calls, no failures or complaints for 13 years. Says the Superintendent of the hospital where the pump is operating, "The advantages of COR-TEN steel for this application are: no rust, no corrosion."

U·S·S COR-TEN Steel pays off in lift truck application by adding strength and abrasion resistance

● The Transitier Truck Co., Portland, Ore., builds a line of HiDuty Lift Trucks that can carry loads up to 3,000 lbs. and high lift them to 144 inches. For good reasons they switched to U·S·S COR-TEN steel for the channels of the inner elevating frames. These channels have a double function. They act as sliding guides on their outer surfaces, their inner sides serve as roller tracks. The mild steel channels originally used left much to be desired. They were subject to rapid abrasion on their outer surfaces and to indenting and swaging of the roller track surfaces.

Both these difficulties were entirely eliminated when COR-TEN steel was substituted for carbon steel plate in the same thickness. There have been no service complaints on this score since. In addition, the 50% greater strength of COR-TEN steel provides extra resistance to deformation which assures safer and more efficient operation when the elevating frame is extended.

U·S·S MAN-TEN Steel reduces weight 16%, makes earth scraper easier to handle, reduces fabricating costs, saves freight

● By using U·S·S MAN-TEN high strength steel in place of carbon steel in their "Hydro-Scoop" scraper, the Stockland Road Machinery Company, Minneapolis, Minn., has been able to reduce weight from 220 lbs. to 185 lbs. This 35 lb. weight saving facilitates operation both in the field and in the fabricating shop. Due to the fact that the lighter sections in which MAN-TEN steel was used permitted one man to handle the part instead of two, the cost of forming one angle item was considerably reduced. Additional savings were realized by the reduced cost of freight shipment, both on the steel to the plant and on the finished scrapers. Says the manufacturer, "Our welding and assembly costs are no greater in any respect than similar costs on carbon steel. We feel that the use of MAN-TEN steel has been highly advantageous."

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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UNITED STATES STEEL EXPORT COMPANY

UNITED STATES STEEL

"After 17 years,

UNITED STATES STEEL

ough jobs like this become easy"

—says Jimmy Fenchak, U·S·STEEL PRESSMAN

● Jimmy has worked in our Homestead Forgings Division for 17 years—as crane floorman, press helper, craneman, press driver and manipulator operator.

Under his skillful care, the raw ingot gets its first and perhaps most important handling. Jimmy has to coordinate two cranes, a manipulator and the press itself to squeeze the rough ingot into a dense, tough piece of steel—accurately shaped to close dimensions.

That piece in the photo is a good example. It's going to be the main cylinder in an unusually large press of radical design. The press itself will be used for the relatively new method of cold-forming sheet metal over rubber dies.

But the most unusual feature of this forging is the fact that, after it is forged to size, we *squash* it into an oval shape. This shape is required because of unusual stress concentrations in the walls of the press cylinder. The cylinder forging, when completed, will be 14 feet long, 7 feet in diameter, 13 inches thick. It weighs 250,000 lbs.

The Pressman is all-important in a tricky job like this. The hole must be absolutely centered. The entire forging must be sound and free from flaws. And when the time comes to actually apply the big squeeze to form the oval, everything must be synchronized: ingot temperature, ingot position and the amount of pressure exerted by the press.

Fortunately, tough jobs like this are old stuff to U. S. Steel Pressmen like Jimmy Fenchak. Everybody in the crew knows that the job will come off without a hitch.

Our point is this: when you want a truly *quality* forging, you'll be wise to put the job in the hands of men like Jimmy. His skill, combined with the finest steel and machinery, is your best assurance of quality when you buy from United States Steel. For more information on U·S·S Quality Forgings, write to United States Steel, 525 William Penn Place, Room 2809-L, Pittsburgh 30, Pa.

USS

Quality

FORGINGS

- heavy machinery parts—carbon, alloy, stainless
- electrical and water wheel shafts
- hammer bases and columns
- marine forgings

New facts for your file on

U·S·S CARILLOY STEELS

Press manufacturer saves money on tools and gets better finished machining with pre-hardened, free-cutting Carilloy FC steel

● Verson Allsteel Press Co., of Chicago, now makes the dies for big press brakes from U·S·S CARILLOY FC steel instead of an ordinary die steel. Pre-hardened, free-cutting FC steel enables this important manufacturer to make harder, smoother dies that are easier to produce.

Here's what Verson says about the performance of FC steel: "This steel cuts much cleaner and more easily than the steel we had been using. As a result, our cutting tools last much longer and the dies are not damaged during machining—even though we are using a much harder steel (300 BHN instead of 250 BHN). In addition, we put a smoother finish on the dies.

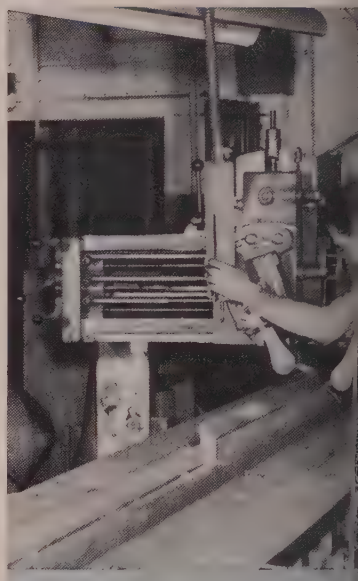
"Smooth finish is especially important in press brake dies, because metal is literally dragged over the die during forming. With these smoother dies, less pressure is needed to make a bend and the dies do not scratch the metal.

"Since the dies are harder, they work better on high tensile steels . . . often eliminate the need for re-treating the dies after use. We're well satisfied with FC steel."

CARILLOY FC is ready for use when delivered.

U·S·S CARILLOY FC steel comes to you already quenched and tempered to the hardness you require and doesn't require heat treatment after machining. It comes in all standard bar forms and sizes in a hardness range from 255 to 375 Brinell. Tensile strengths ranging from 125,000 to 175,000 psi. are available.

Our experienced metallurgists will be glad to discuss the possible applications of pre-hardened, free-cutting FC steel in your products. Just write to United States Steel, Room 2809-L, 525 William Penn Place, Pittsburgh 30, Pennsylvania.



Planing press brake dies from free-cutting Cari FC steel at Verson Allsteel Press Co. Carilloy FC much easier to machine than the steel previously us so tools last much longer. In addition, better mach ability makes it possible for Verson to get a smooth finish and to use a harder steel for the dies. As a re the dies give better service.

Possible Applications for U·S·S CARILLOY FC steel

Arbors
Armature Shafts
Axles
Ball Bearings
Ball Races
Brake Press Dies
Blanking Dies
Bolts
Boring Bars
Bucket Teeth
Bushings
Cams
Chain Links
Chain Pins
Chuck Bodies
Chisels
Chisel Bushings
Clash Gears
Clutches
Collets
Connecting Rods
Connecting Rod Bolts
Coining Dies
Crankshafts
Cutter Bodies
Cylinder Head Studs
Dies
Die Bodies
Drift Pins
Drill Shanks
Elevating Screws
Embossing Dies
Expanding Mandrels
Feed Screws
Forge Hammers
Forge Rams
Forming Dies
Forming Rolls
Gauges
Gears
Guide Pins
Hammers
High Tempered Bolts
Hydraulic Rams
Jigs
Keys
Knuckle Pins
Knuckle Shafts
Lead Screws
Mandrels
Master Hobs
Molds
Nuts
Pinch Bars
Pinions
Pins
Pipe Cutter Wheels
Piston Rods
Pitman Screws
Plastic Molds
Pliers
Power Drive Bits
Propeller Shafts
Punches
Races
Racks
Ratchets
Reamer Bodies
Reamer Shanks
Rollers
Screws
Screw Drivers
Shafts
Shear Blades
Sleeves
Sleeve Shafts
Spindles
Spline Shafts
Spring Collets
Straightening Rolls
Studs
Swaging Rolls
Tap Shanks
Tool Bodies
Tool Post Screws
Trimming Dies
"U" Bolts
Universal Joints
Valve Studs
Worms
Wrenches

USS

UNITED STATES STEEL CORPORATION, PITTSBURGH — COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

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5th NATIONAL
MATERIALS HANDLING EXPOSITION
MAY 18-22, 1953
PHILADELPHIA

HYSTER

The more you use it...the more uses you find for it!

The Hyster Karry Krane rides smoothly on big pneumatic tires, and handles as easily as a truck. Gasoline-engine driven. Conventional controls. Turns around within its own length!

HYSTER KARRY KRANE®

10,000 LBS. CAPACITY

"I've bought my third Karry Krane, and I still don't have one around, because other departments keep borrowing it. I'm going to order another," one superintendent* says, and many companies have this experience after buying a Karry Krane.

If you have yard operations of any sort, loading or unloading gondolas or flatcars, large bulky objects to handle and store, the Hyster Karry Krane is your most profitable solution. Because it handles load units not profitably handled by other types of materials handling equipment, the Karry Krane is a perfect complement to any lift truck fleet operation.

The Hyster Karry Krane costs little to operate. It pays for itself in a short time, depending on the operation, then keeps on saving and making money for you afterwards. With a Karry Krane on your premises, you can be sure of handling any tough load profitably. *For details, write today for Catalog 1236 to:*

Hyster Co., 2902-75 N. E. Clackamas Street, Portland 8, Oregon.

*name on request

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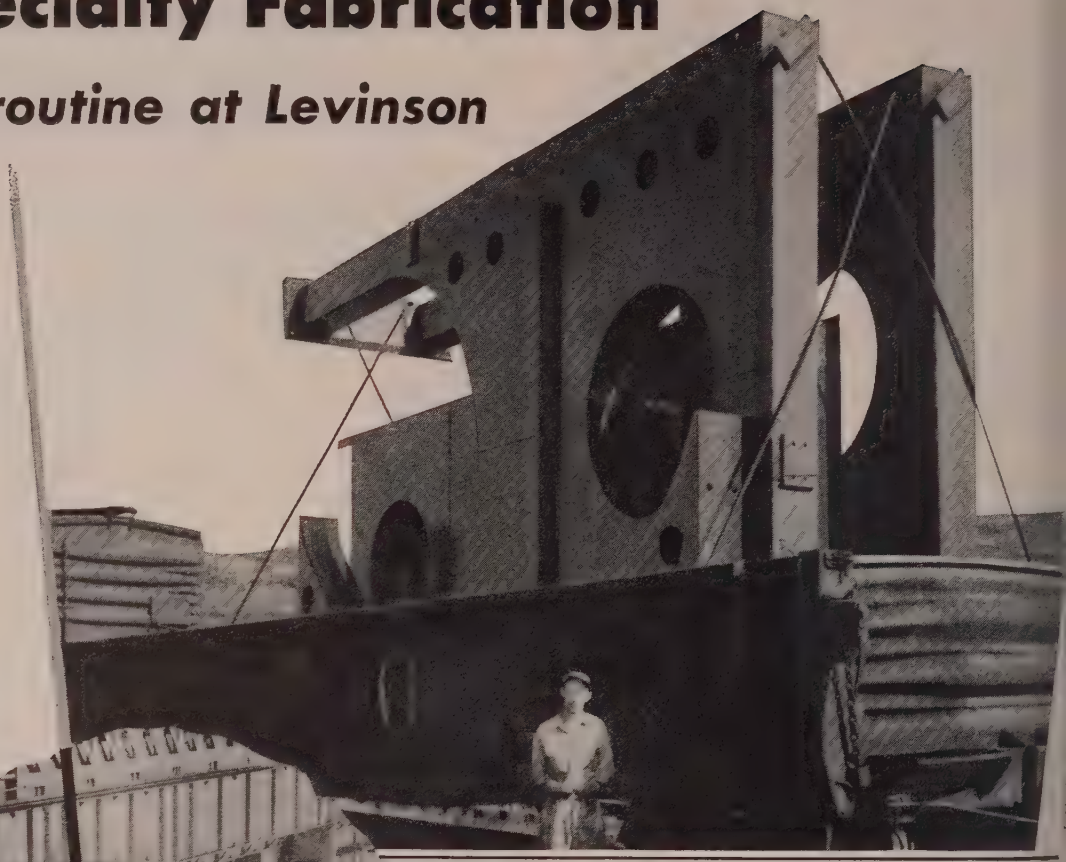
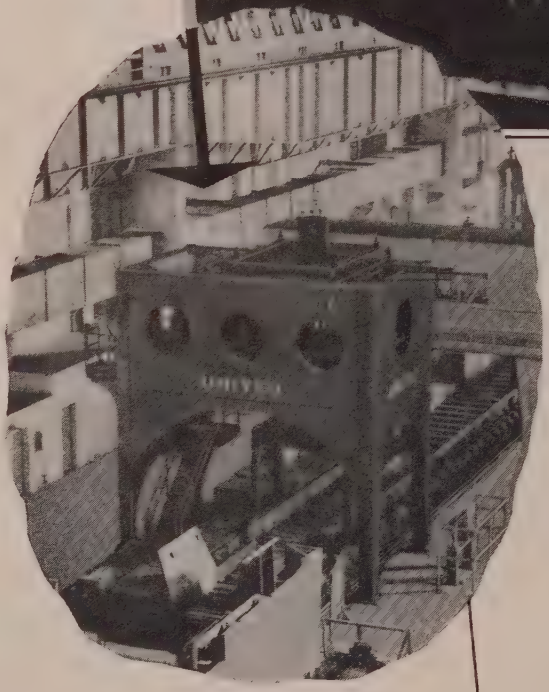
STER COMPANY FOUR PLANTS: Portland, Oregon • Peoria, Illinois • Danville, Illinois • Nijmegen, The Netherlands

Specialty Fabrication

. . . routine at Levinson





In addition to regular structural steel for buildings . . .

. . . Levinson fabricates steel for coal tipples, coke ovens, industrial furnaces, conveyors, and special jobs like the ingot turner shown here.

The Levinson shops have the "know-how" and the equipment to turn out fabricated beams and columns for simple construction or highly complex chute and hopper work of the most exacting requirements.

You can look to Levinson for high-quality fabricated steel regardless of the nature of the work.

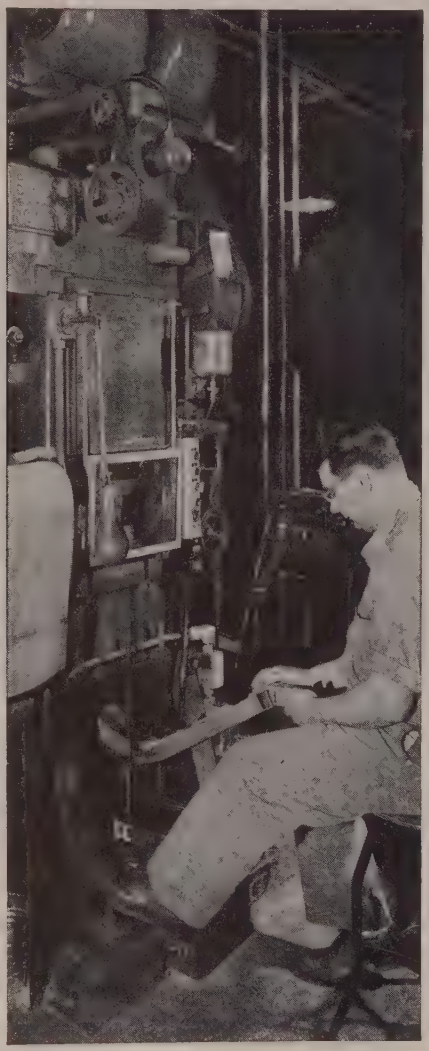
The Levinson STEEL COMPANY

20TH & WHARTON STS., PITTSBURGH 3,

Fabricators of Steel for Industry

LS-32

THE TREND IS TO MORE STAMPINGS WITH BLISS PRESSES

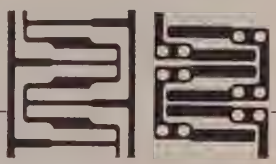


Bliss High Production Press, No. 630, one of six at Western Electric's Kearny Works.

At *Western Electric* Bliss Presses Produce Switchboard Stampings at 300 spm

For *really* high-volume production of precision stampings for telephone switchboards, Western Electric Company uses six Bliss High Production Presses at its Kearny (N. J.) Works. Equipped with precision roll feed and scrap shear, the Bliss units operate at speeds up to 300 spm and hold tolerances within .002" in progressive dies. And set-up time for die changeover in these Bliss automatic presses averages *only 30 minutes.*

Bliss High Production Presses are ideal for high-speed, short-stroke production and for progressive die work. This type of press was introduced by Bliss more than 20 years ago in keeping with its continuing policy of providing "the right press for a given job." Whether your job is stamping, drawing, forming or squeezing, it's wise to investigate Bliss *first.*



FOR EXAMPLE:

Hinge Spring (above)
.008" nickel silver; No. 630 Bliss press; progressive tool and automatic feed plus pilots; 125 spm; two parts per stroke, 9,000 parts per hour; 2,850,000 parts per year.

Contact Spring
.0225" nickel silver; No. 620 Bliss High Production Press; compound tool and automatic feed; 300 spm; 12,500 parts per hour; 1,200,000 parts per year.

Clamping Plate
.032" steel; No. 650 Bliss press; progressive tool and automatic feed plus pilots; 180 spm; five parts per stroke; 41,400 parts per hour and 5,700,000 parts per year.

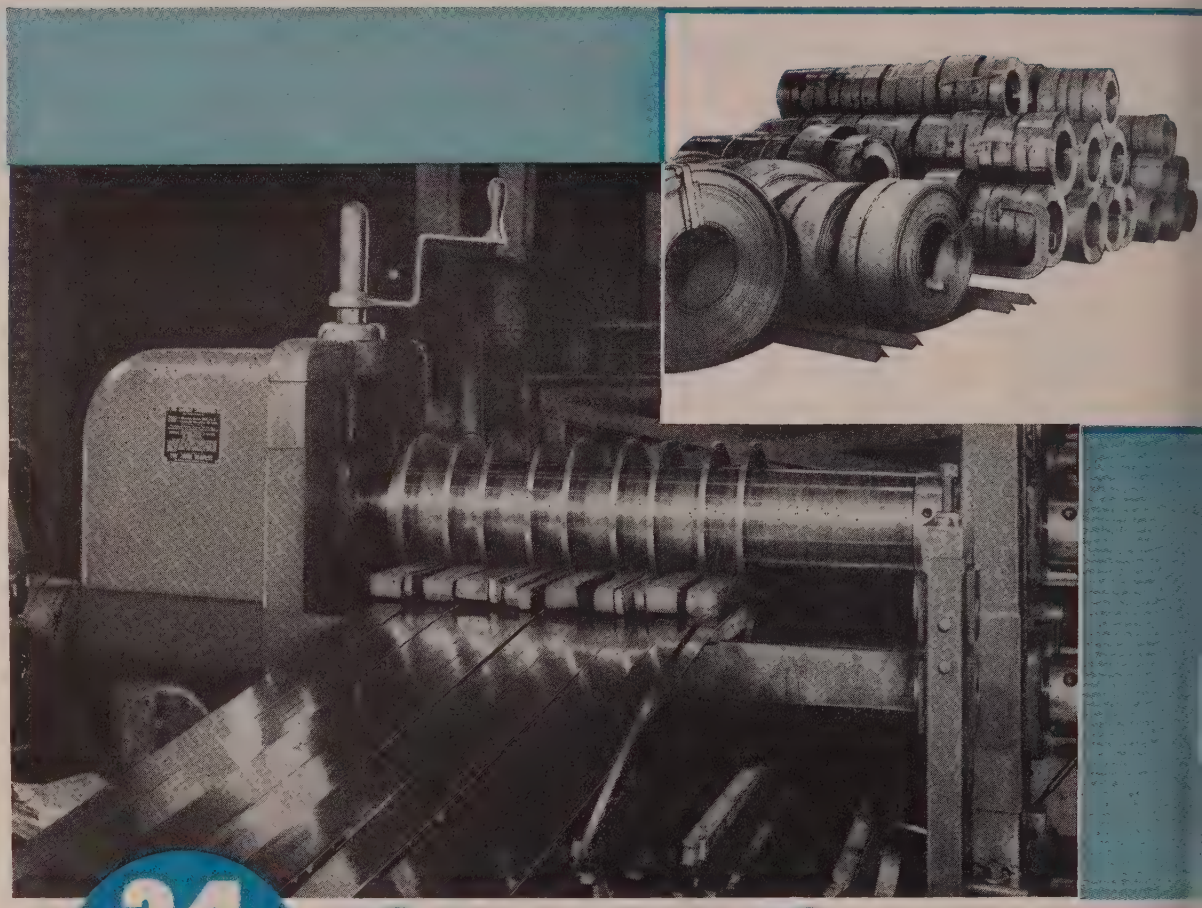
Contact Spring
.0131" nickel silver; No. 630 Bliss press; compound tool and automatic feed; 300 spm; 13,500 parts per hour; 6,850,000 parts per year.

E. W. BLISS COMPANY, CANTON, OHIO
E. W. Bliss (England) Ltd., Derby, England
E. W. Bliss Company (Paris), St. Ouen sur Seine, France
PRESSES, ROLLING MILLS, SPECIAL MACHINERY

Branch offices in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. West Coast Representatives: Moore Machinery Co., Los Angeles and San Francisco; Star Machinery Company, Seattle. Other dealers in United States cities and throughout the world.

BLISS

ON YOUR PRESS IS MORE THAN A NAME...IT'S A GUARANTEE!



24 HOUR *Slitting Service!*

If you operate a slitter of your own, you may always enjoy this kind of service. Think what a blessing it is to be able to meet expected and unexpected needs for slit strands on such short notice—how greatly it simplifies production planning—how it eliminates production bottlenecks and minimizes strip inventories.

Then, too, when you buy strip in standard widths, your strip supply sources are more numerous. You buy wherever you get the best delivery, price, and quality.

Slitting service now may cost you anywhere from $10.00 to $100.00 or more per ton. Even if your needs were only 50 tons per month, at an average of $20.00 per ton for slitting, the cost per year would be $12,000.00—an amount which alone may be more than sufficient to make a Yoder slitter highly profitable.

The Yoder Slitter Book (sent on request) analyzes and discusses the economics as well as the mechanics of slitter operation. Yoder engineers will be glad to study your needs and submit recommendations as to kind, size, and cost of suitable slitting equipment.

THE YODER COMPANY • 5502 Walworth Avenue, Cleveland 2, Ohio

Complete Production Lines

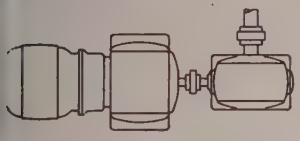
- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding

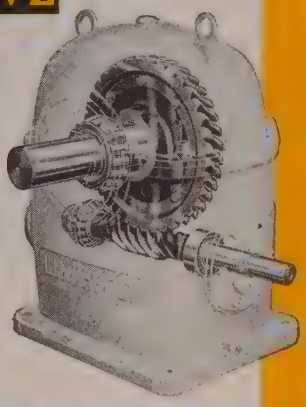
ENGINEERING YODER MANUFACTURING

How to change even complex speed reduction problems into *simple* ones

WORM GEAR DRIVE

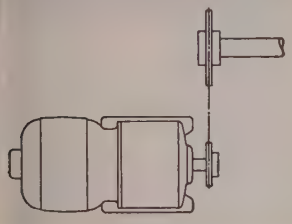
'ORM GEAR and P.I.V. variable eed drives are shown direct-coupled. nk-Belt worm gear drives are avail- le in 3.1:1 to 8000:1 reduction ios—1400 to 123,000 in. lbs. que—0.22 to 564 output shaft m. Ask for Book 2324A.

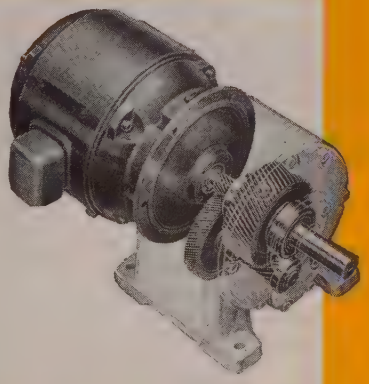




GEARMOTOR & HELICAL GEAR DRIVE

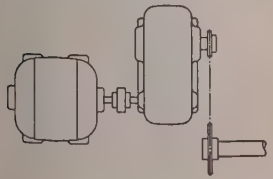
EARMOTOR is shown with roller hain drive. Link-Belt Helical Gear Drives, Gearmotors and Motogears re available in 6.2:1 to 292:1 re- uction ratios—1 to 30 hp—6 to 80 output shaft rpm. Ask for Books 247 and 2451.

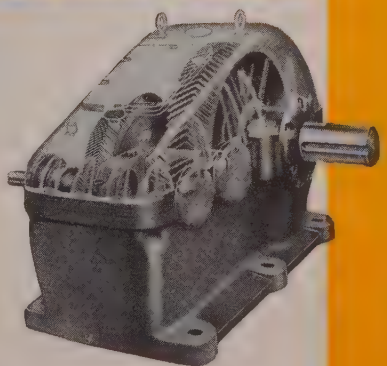




HERRINGBONE GEAR DRIVE

HERRINGBONE GEAR DRIVE is shown connected by flexible coupling to motor and with roller chain take- off. Link-Belt Herringbone Gear Drives are available in 2.84:1 to 326:1 ratios—0.4 to 2480 hp—2.2 to 623 output shaft rpm. Ask for Book 2519.





Get the proper drive combination that best meets your requirements from the broad LINK-BELT line

In addition to matching a wide range of requirements for ratio, hp, loading conditions and similar factors—Link-Belt enclosed gear drives offer you other benefits. When your Link-Belt representative selects a helical, herringbone or worm gear drive, you have no worries about coordinating it with your other components.

For Link-Belt builds a complete power transmission line. There's no need to exchange drawings with a third person to calculate chain, sprocket, coupling, bearing or even shafting requirements. You can get all these from one source . . . each pre-engineered for perfect fit.

Next time you're faced with a speed reduction problem, take it to power transmission headquarters. There's a Link-Belt sales office or distributor near you. Call today for complete engineering information.

LINK-BELT

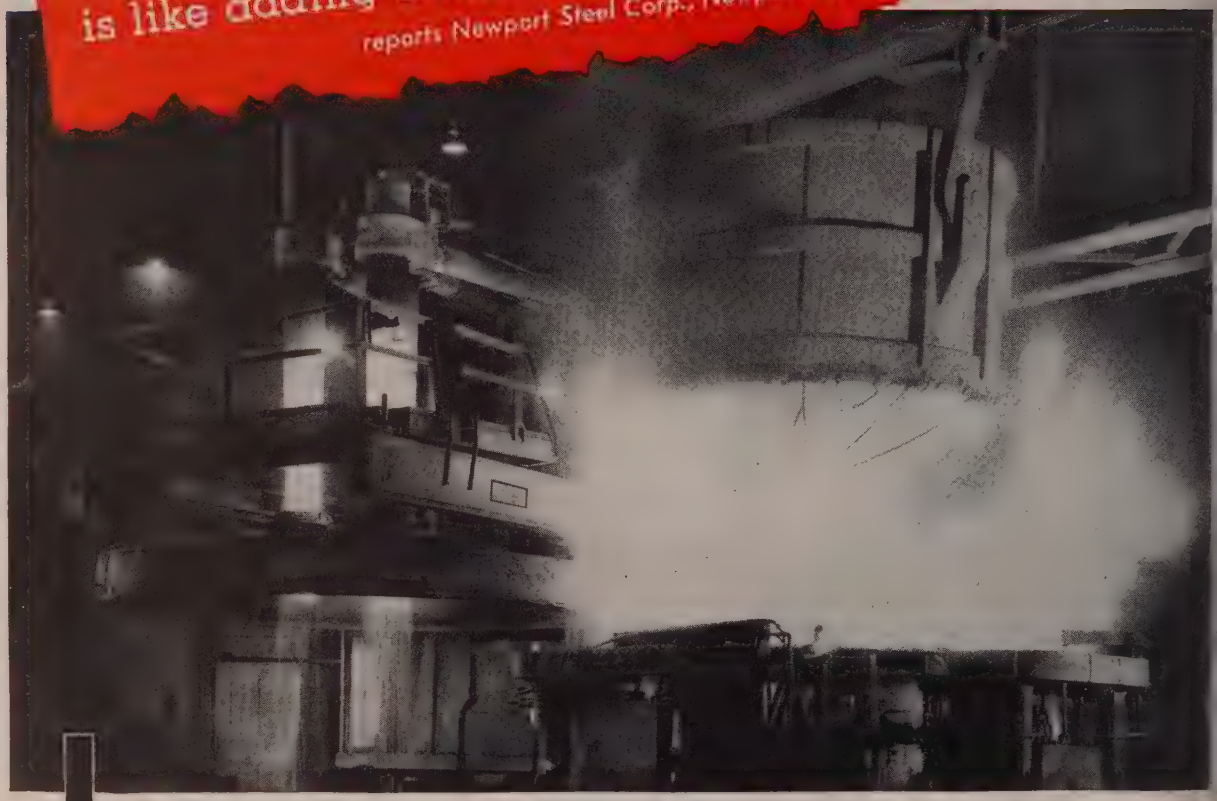
ENCLOSED GEAR DRIVES

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

13,128

"Top charging on our two electric furnaces is like adding a third furnace!"

reports Newport Steel Corp., Newport, Ky.



Lectromelt* fast-opening furnace top in its charging position.

Two of Newport Steel's 80-ton electric furnaces are equipped with the Lectromelt lift-and-swing top-charge feature; their third is door-charged. You have a comparison based on facts, therefore, in these production figures.

Top charged furnaces have reached 4% more tonnage per heat, 30% more heats per month, and 36% more average monthly output than that of door charged furnaces.

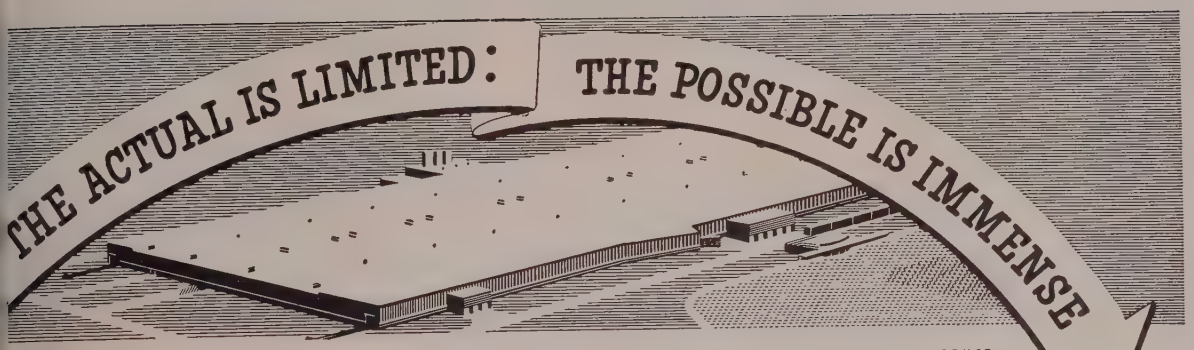
"You can't melt scrap in the stockyard", says the Superintendent of Steel Production. "Top charging lets you get scrap into the furnaces fast." Records show that Lectromelt top charging is accomplished here in half the time required for door charging, thereby helping to maintain high efficiencies and lower costs.

For Catalog No. 8 giving you more details on Lectromelt Furnaces, write Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pennsylvania.

Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co. Ltd., Nagoya

*Reg. T. M. U. S. Pat. Off.

WHEN YOU MELT... MOORE RAPID *Lectromelt*



NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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REDESIGN TO WELDED STEEL ELIMINATES MACHINING

. . . cuts weight in half

By **L. Kibler,** Chief Engineer
A. K. Robins & Co., Inc.
Baltimore, Md.

THE production of bases for our food processing machinery is now greatly simplified by the use of welded steel design. Essentially all machining is eliminated. Originally 14 hours of machining was necessary to mill and drill the two side castings. Now these members are fabricated from plain angles by jigging in fixtures and welding.

Important to us is the flexibility in design gained with steel construction. Changes in design for special needs no longer involve pattern alterations. Furthermore, less than half the material is needed. The frame is actually stronger, more rigid than before and permits easier adaptation for motor drives. Yet with all these advantages, the production cost has been cut from $62.00 to $48.06 . . . a saving of 23%.

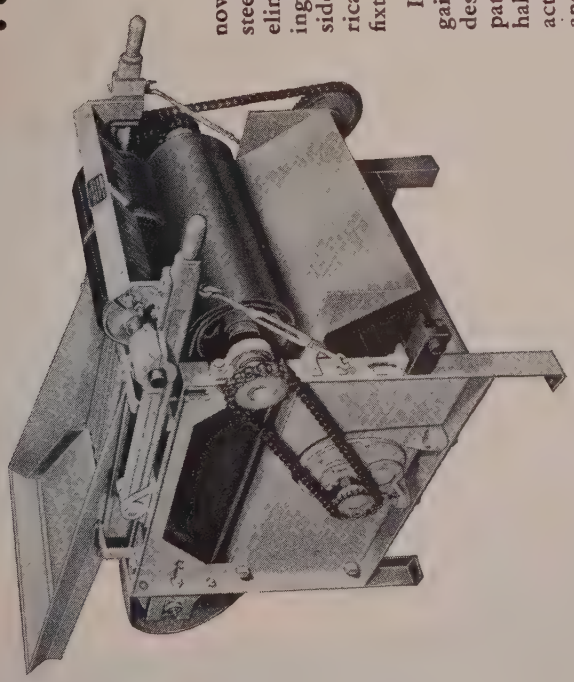


Fig. 3. Present Welded Steel Design—*Bean Slitter manufactured by A. K. Robins & Co., Inc. has neat, easy-to-clean appearance . . . is simpler to manufacture, costs less than former cast construction.*

PROPER DESIGN IN WELDED STEEL IMPROVES PRODUCT LOWERS COST

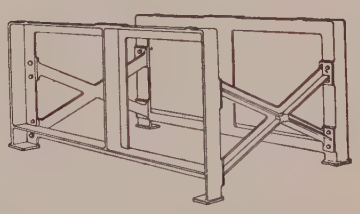


Fig. 1. Original Design *of machine base using cast construction weighed 340 pounds . . . required 14 hours milling and drilling time.*

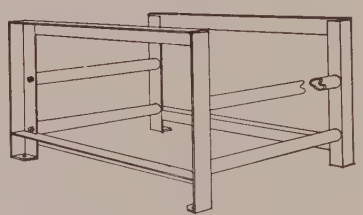


Fig. 2. Present Steel Design—*Fabricating time is only 6 hours . . . weighs only 166 pounds. Base is actually stronger, more rigid, has neater appearance . . . yet costs 23% less to manufacture.*

HERE'S HOW

GET THE FACTS—Machine Design Sheets available on request. Designers and Engineers write on your letterhead to Dept. 1602,

THE LINCOLN ELECTRIC COMPANY

CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

NIAGARA Presents

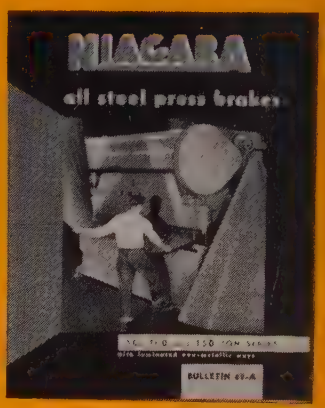
outstanding design features:

- Double End Twin Drive with double reduction gearing (for straight bends and smooth power application.)
- A rigid One-piece Frame with permanently welded crown for minimum deflection and permanent alignment.
- Laminated Non-Metallic Ways maintain accurate alignment and assure longest life of dependable service.
- Deep Twin Plate Steel Bed with open slug clearance for multiple punching work.
- Powerful Air Cooled Friction Clutch and Brake assures easy ideal "Press Brake Action".
- Air Electric Clutch Control may be operated by palm buttons on ram or foot switch with provisions for "Inching", "Single Stroking" and "Continuous Run".
- Reversible Flywheel can be pulled out of accidental stalls.
- Power Adjusted Ram with self-locking adjusting screws.
- Micrometer Dials accurately indicate position of ram so die settings can be quickly repeated.
- Accessibility at rear with plenty of clear working space for safety.
- Gages with full horizontal and vertical adjustment for front or rear of press.
- Angle Support Brackets and Bolster Plates quickly convert press for stamping operations without affecting bending ability.
- All gears operate in totally enclosed sealed baths of oil.

versatility of operations

BENDING	JOGGLING
FORMING	NOTCHING
DRAWING	PUNCHING
BEADING	PIERCING
CURLING	PERFORATING
CORRUGATING	SLITTING
BLANKING	TRIMMING
EMBOSSING	ETC.

WRITE FOR BULLETIN 89



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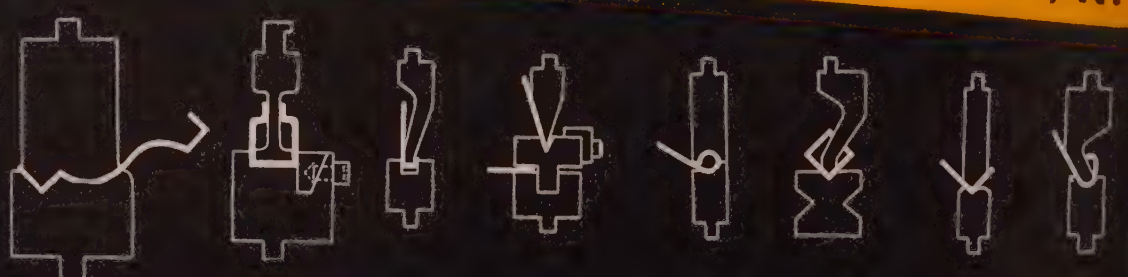
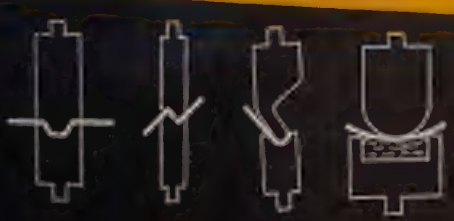


The Last Word in New All-Steel PRESS BRAKES

DISTRICT OFFICES: DETROIT, CLEVELAND, NEW YORK, PHILADELPHIA



America's Most Complete Line of Presses, Shears, Machines and Tools for Sheet Metal Work

Dealers in principal U. S. cities and major foreign countries

What U. S. Rubber means by "job-geared" grinding wheels...

(Below) **Grinding a weld** in section of a new air duct for steel mill, using a U.S. Royal straight side wheel.

They mean just this. From United States Rubber Company's wide selection of grinding wheels, "U.S." technicians recommend only a wheel that is exactly *geared* to the job. If there's no such wheel, they'll design one.

Take the special U.S. Royalite® Cup Wheel shown in action above. It's grinding smooth the steel table top for a large industrial saw. This wheel must have just the right degree of softness to finish the already semi-smooth surface. Because it's "job-geared", it works perfectly. Next time you need the right wheel, write to the address below.

PRODUCT OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPAN

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

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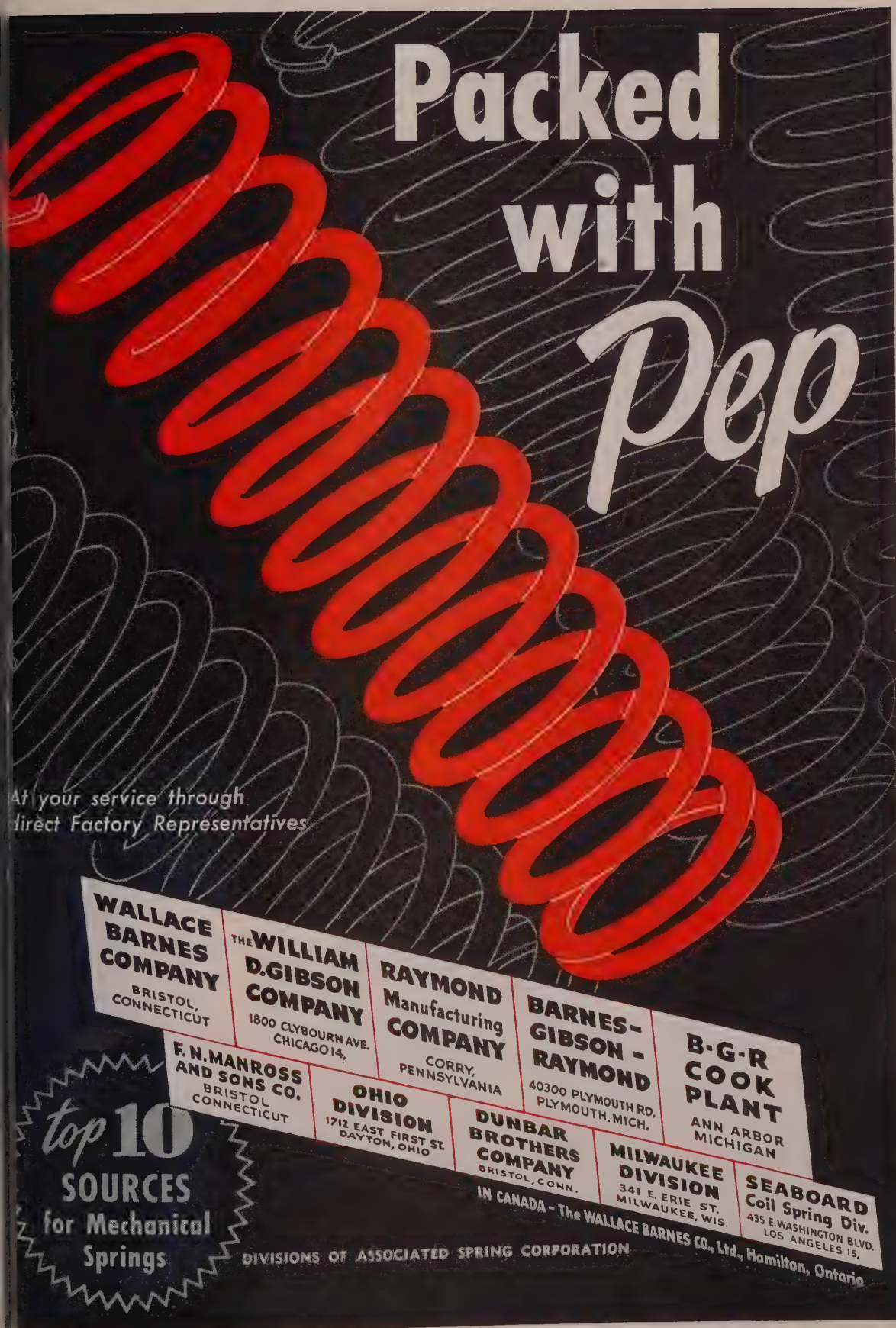
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At your service through direct Factory Representatives
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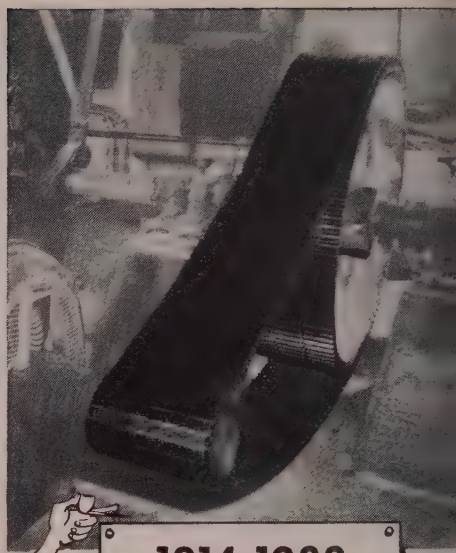
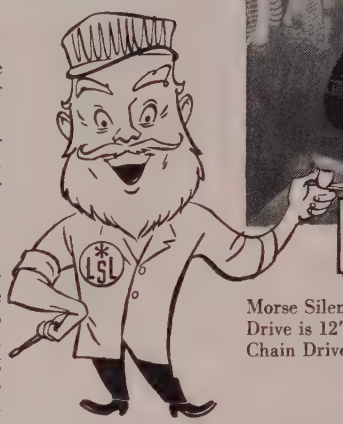
SEABOARD Coil Spring Div.
435 E. WASHINGTON BLVD. LOS ANGELES 15,
IN CANADA - The WALLACE BARNES CO., Ltd., Hamilton, Ontario
top 10 SOURCES for Mechanical Springs
DIVISIONS OF ASSOCIATED SPRING CORPORATION

Can you expect 38 years of service life from your silent chain drives?



Morse Silent Chain Drive on one of eight elevating le
Drive is 12" wide x 1" pitch. This is one of eight Sile
Chain Drives just replaced after 38 years of service.



Western Maryland Railway Company uses over three miles of belt conveyors in the big grain elevator shown below.

Sixty-five Morse Silent Chain Drives transmit power from motors of from 5 to 100 hp. to drive the belts which lift 15,000 bushels of wheat per hour or deliver 90,000 bushels per hour.

Long, long service life

Morse equipment was used in the original installation of the elevator over 38 years ago. The Morse Silent Chain Sprockets are still the original ones. So are the majority of the Morse Silent Chain Drives. The exceptions: The chain on the eight elevating legs and the chain on one of the long delivery belts were just replaced. Also, in 1922 an explosion wrecked a few drives, which were replaced and have been operating only 31 years.

See your Morse Distributor

Morse Silent Chain Drives are ruggedly built around the exclusive Morse Rocker Joint. They transmit power smoothly, noiselessly, with over 99% efficiency. Service life is unusually long and trouble free.

Do you want to reduce machine-down time? Want exceptional service life from your power transmission equipment? Want to reduce cost per hour of power transmission? Then see your local Morse Distributor about Morse Stock Silent Chain Drives —or Morse Roller Chain Drives, Morse Morflex Couplings, Morse Chain Couplings, and other Morse stock products. Look under "Chains" or "Power Transmission" in phone directory's yellow pages.

MORSE CHAIN COMPANY

Dept. 449 • 7601 Central Avenue • Detroit 10, Michigan

*

Long Service
Engineering Ser
Quality—which
get in unusual de
when you buy M
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Products.

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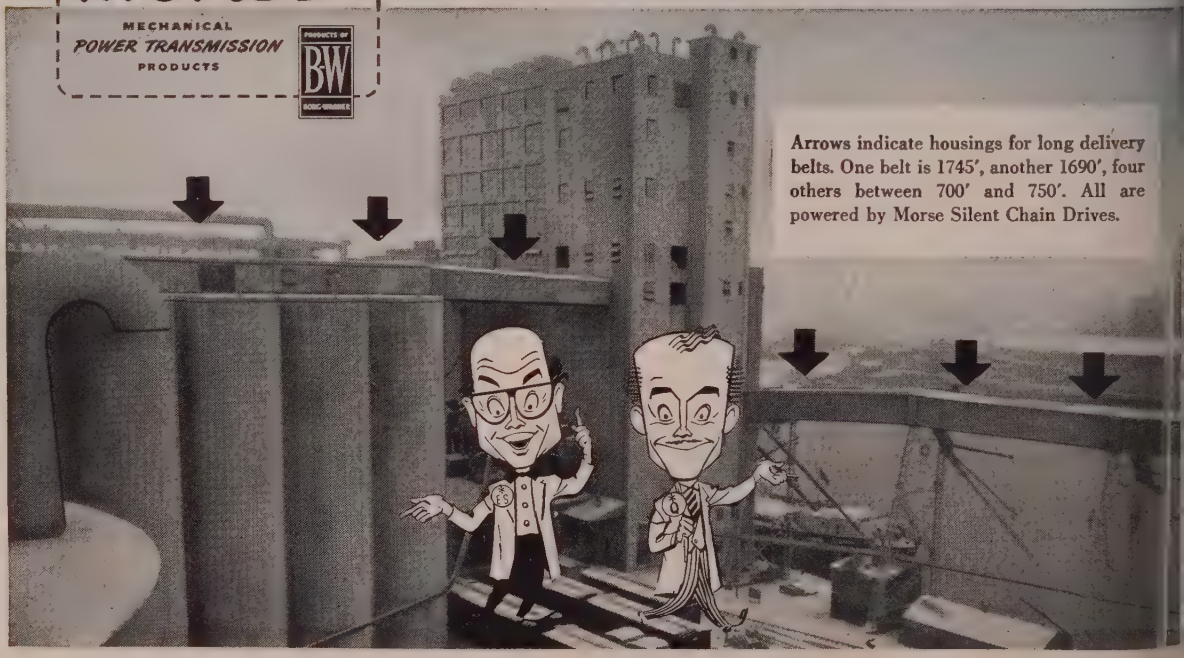
PRODUCTS
BW

M=PT; Morse *means* Power Transmission



Arrows indicate housings for long delivery belts. One belt is 1745', another 1690', four others between 700' and 750'. All are powered by Morse Silent Chain Drives.

for economy in coiling,
knotting, forming —

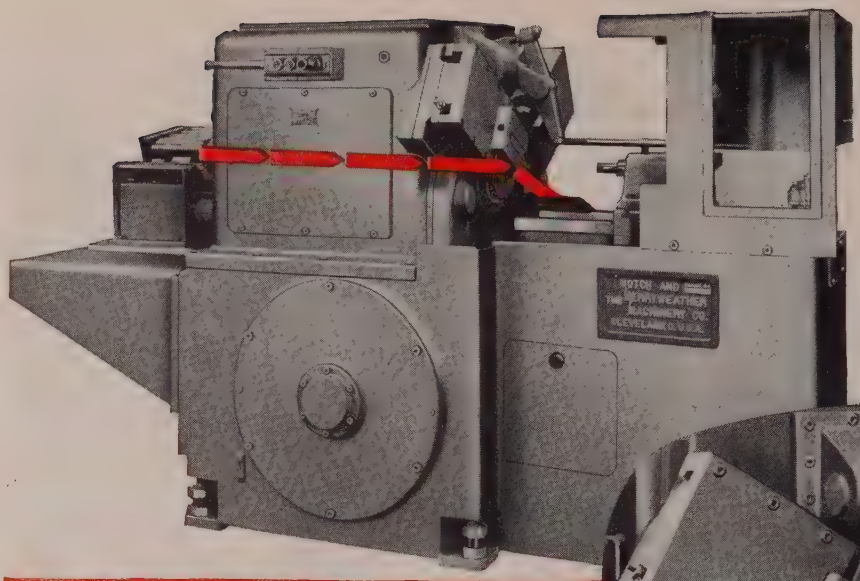
Pittsburgh

Oil Tempered SPRING WIRE

Day after day, in plant after plant Pittsburgh Oil Tempered Spring Wire is proving that it has the acceptance of production managers and machine operators alike. They find it has the uniform size accuracy and ductility to work smoothly in coiling, knotting, and forming machines. This reduces time; keeps production records climbing. That is why it pays to specify Pittsburgh Oil Tempered Spring Wire. It has the quality, proved in use that gives you economical production runs. For information write Department S, Grant Building, Pittsburgh 30, Pa.

Pittsburgh Wire

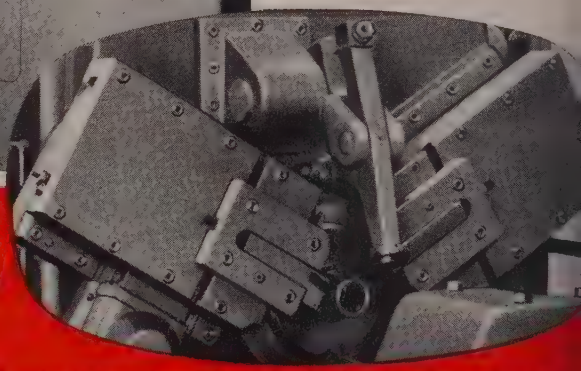
A product of **PITTSBURGH STEEL COMPANY**



MP/S

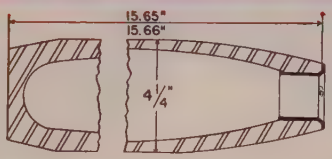
Most Production per Square F

Conveyor carries shells to hopper. Shells are fed automatically through hollow spindle, machined and ejected onto conveyor.

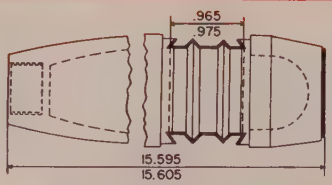


MOTCH & MERRYWEATHER *Automatics* make the most of AUTOMATION

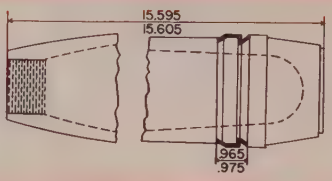
Material: shell steel SAE 1050.
Operation: bore, face, chamfer (nose end)
Estimated Production: 220 pcs/hr. @ 100%.



Material: shell steel SAE 1050.
Operation: face base, turn band groove and band relief.
Estimated Production: 120 pcs/hr. @ 100%.



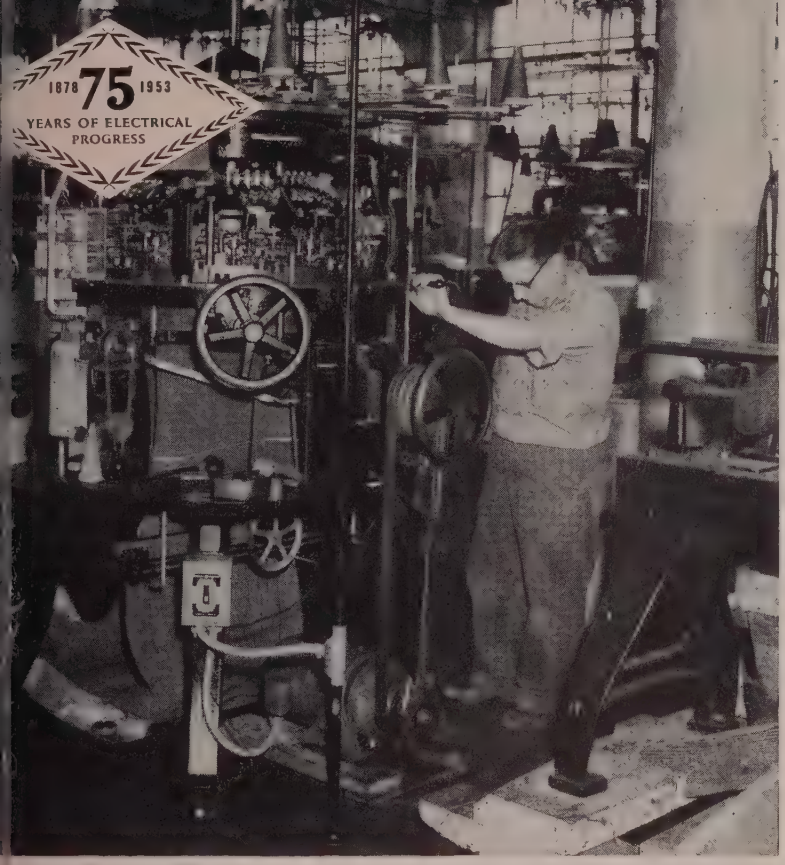
Material: shell rotating band.
Operation: turn band.
Estimated Production: 220 pcs/hr. @ 100%.



This single-spindle, form-turning automatic, developed for civilian production, has been assigned to much heavy duty munition work. Loading, positioning and unloading are completely automatic. All functions are actuated by hardened cams. With operator fatigue eliminated, one man can service several machines.

Manufactured by THE MOTCH & MERRYWEATHER MACHINERY CO.
CLEVELAND 13, OHIO
Builders of Circular Sawing Equipment, Production Milling, Turning and Special Machines

PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT



THE BAMBERGER-REINTHAL CORPORATION, CLEVELAND—YOU, TOO, CAN . . .

lodernize Your Equipment /ith New G-E Gear-motors

Bamberger-Reinthal Corporation leveland, Ohio recently converted ew G-E Gear-motors for machines ting sweaters, shirts, stoles, and . Bamberger-Reinthal says: "These G-E Gear-motors are much more ient than our previous drive. y're the latest thing as far as we're erned, and they're less expensive perate and maintain."

Gear-motors will modernize your ation too! Here's why:

GEAR-MOTORS ARE COMPACT, iring only a little more space than gular constant-speed motor of the same rating. No external speed reduction equipment is necessary.

G-E GEAR-MOTORS ARE RUGGED. They're engineered to give you years of dependable service under the most severe operating conditions.

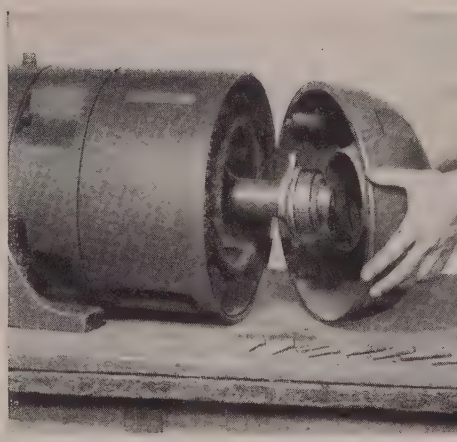
Assure yourself of getting the most efficient, easiest-to-maintain low-speed drive. Specify G-E Gear-motors.

A new stocking plan now makes one-week delivery available on over 300 models. Order your G-E Gear-motor through your nearest G.E. Apparatus Sales Office, or your Authorized G.E. Agent or Distributor. General Electric Co., Schenectady 5, N. Y. 755-11

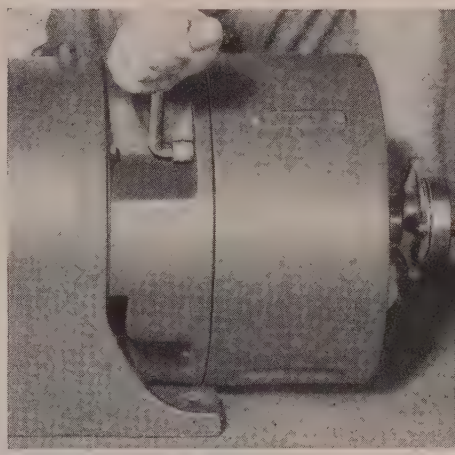
You can put your confidence in—

GENERAL ELECTRIC

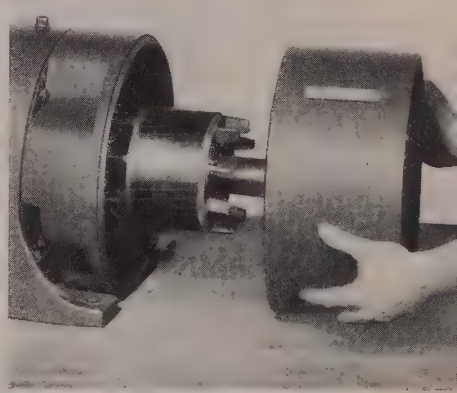
MAINTENANCE IS QUICK AND EASY



REMOVE ENDSHIELD FROM STATOR. If stator removal is required, it's never necessary to remove gear-motor from its foundation or disturb the gear train in any way.



UNBOLT STATOR FRAME BOLTS. Adapter located between motor frame and gear housing gives easy access to stator frame bolts. Note: no special tools are needed.



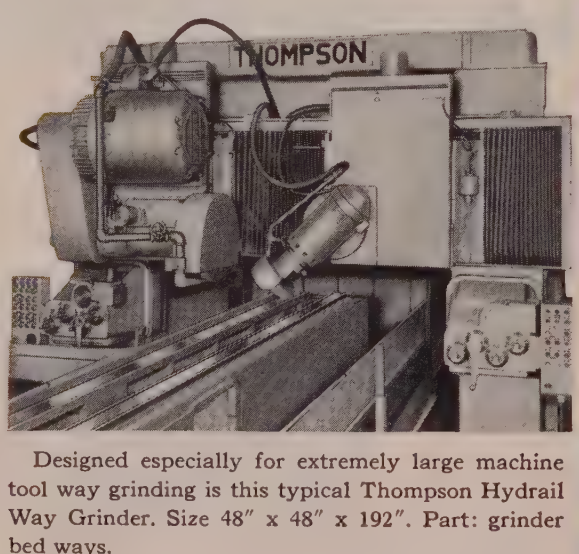
NOW THE STATOR MAY BE REMOVED. Entire job takes only minutes. This is only one of many features designed to cut "down time" up to 50 per cent.

New Thompson Way Grinder Development

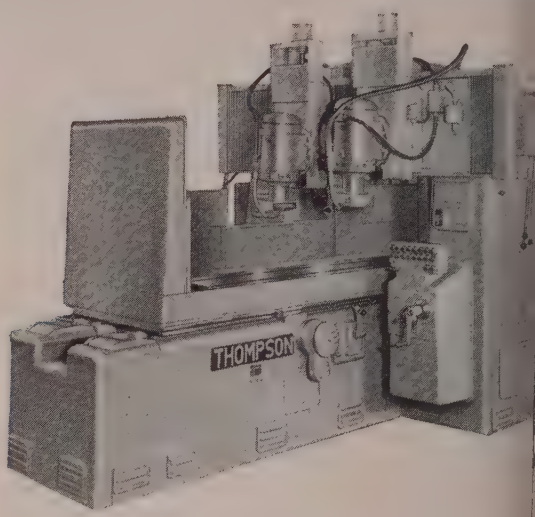
Reduce Costs . . . Speed Machine Tool Productio

Way Grinders now available with single, multiple heads, or combinations of horizontal and vertical heads and in sizes to meet all requirements.

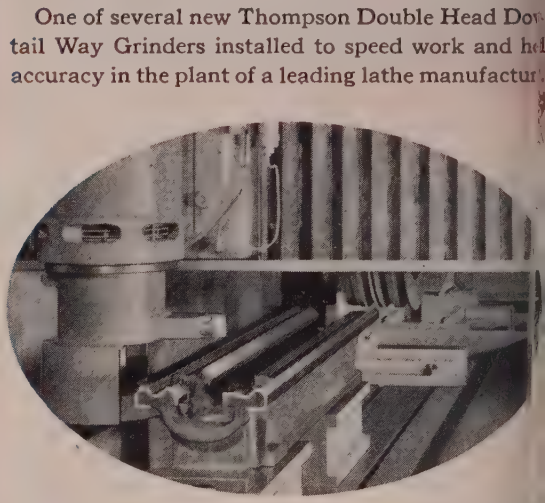
Thompson has produced machine tool way grinders in many types and sizes that have eliminated hand-work and produced economical and accurate ground ways. However, recently increased production grinding of ways has been made possible by many new Thompson Way grinding developments such as: automatic grinding and truing cycles; dual vertical or horizontal heads for grinding ways different heights; horizontal multi-wheel grinding and vertical side and undercutting head; Hydrail way grinding for giant columns or bed ways. Three of the new Thompson Way Grinders are shown here.



Designed especially for extremely large machine tool way grinding is this typical Thompson Hydrail Way Grinder. Size 48″ x 48″ x 192″. Part: grinder bed ways.



One of several new Thompson Double Head Do tail Way Grinders installed to speed work and h accuracy in the plant of a leading lathe manufactur



Multi-wheel grinding with auxiliary vertical h Equipped with horizontal spindle having dual sp wheels and auxiliary inclinable spindle. The fi contoured grinding wheel grinds the rear set of w and the rear grinding wheel grinds the front set, vith vertical head grinding the sides and undersurfac of the ways and rack seat.

Write for details Today.

The Thompson Grinder Company, Springfield, Ohio

Thompson SURFACE Grinders

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JESSOP Announces the First Complete Line of Tempered-and-Ground Flat Steels in America!

In keeping with Jessop's drive for unqualified leadership in the production of specialty steels, is this new manufacturing development at the Washington mill. Through a continuous process, carefully-controlled, ground-and-polished carbon, alloy, and stainless flat steels in widths up to 24 inches and in all applicable cut lengths, are available in large quantities. For example, the automatic furnace equipment alone is capable of processing a normal 7,000,000 pounds per year. Such steels in quantity were formerly obtainable only in Europe, on an average delivery schedule of at least 18 months. Now, you can get them from Jessop in a few weeks. This new availability should be of high interest to the makers of band saws, paper mill machinery, food packing equipment, textile machinery, and all others that require tempered steel with fine surface finish, flatness, straightness, accuracy of gauge, and exact composition. When inquiring, mention TRU-GROUND, which is the trade name of this new steel . . . this prime example of Jessop enterprise.

JESSOP

STEEL COMPANY · WASHINGTON, PA.

CECO-DROP FORGINGS DOWN ON THE FARM

A. PLOW SHARE—*Hammer forming and welding, after the blade has been bent on a bulldozer and plated, insures the long useful life of the forged blade. A 4000 lb. CECO-DROP gives such an edge on this 23" share.*

B. TRACTOR LINK—*Forged in a two impression die from large pre-cut stock (SAE 1045). A 4000 lb. CECO-DROP makes the forging in fewer blows than other hammers.*

C. PLOW SWEEP—*Starts out as 8660 type alloy sheet steel (1/4") blanked out on a press. After heating, a series of blows on a CECO-DROP levels the edges of the share. It is then pierced and formed on a press. The CECO-DROP produces more uniform edges and gives increased die life.*

D. TRACTOR STEERING GEAR SECTION—*Formerly produced on a 4000 lb. Board Hammer. Now forged on a 3000 lb. CECO-DROP. Round stock (27 1/2" dia.) is used on a 3 impression die. Trimmed while hot.*

CHAMBERSBURG CECO-DROP HAMMERS

Farm equipment takes hard usage and forgings have the stamina for it. Agricultural machinery manufacturers are more and more finding the value of CECO-DROP forging. CECO-DROPS are piston lift, gravity drop hammers—the result of over a half century of hammer building. They are engineered to work more forging minutes per hour, with operating economy, ease of control, and a high safety factor. CECO-DROPS are consistently creating production records in a wide range of forging operations. Send for Bulletin 11-L-0

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

CHEMICAL USERS' GUIDE To General Chemical Products for the Metal Industries

PRODUCT	AVAILABLE FORMS	COMMERCIAL STRENGTHS	SHIPPING CONTAINERS	APPLICATIONS
lfuric Acid SO_4	Liquid	66° Be (93.19%) 99% Oleum, 20-65%	Carboys (except Oleum) Steel Drums Tank Trucks Tank Transports Tank Cars	Pickling and descaling; electroplating; bright dipping; electrolytic polishing; galvanizing; anodizing.
ydrochloric Acid 1 + water *uriatic Acid)*	Liquid	18° Be (27.92%) 20° Be (31.45%) 22° Be (35.21%)	Carboys Tank Trucks Tank Cars	Pickling; electroplating; bright dipping; galvanizing; tinning; etching metals; dissolving metals.
tric Acid NO_3 + water	Liquid	36° Be (52.30%) 38° Be (56.52%) 40° Be (61.38%) 42° Be (67.18%) 95%	Carboys (except 95%) Drums Tank Cars	Pickling; electroplating; bright dipping; oxide finishing; dissolving and stripping metals.
drofluoric Acid + water	Liquid	60% 70%	Steel Drums & Tank Cars	Pickling; electroplating; electrolytic polishing; bright dipping.
dium Fluoride aF	White Powder	95% or 97% Light or Dense	Multiwall Paper Bags Fibre Drums	Manufacture of rimmed steel; heat treating; galvanizing; pickling; electroplating.
dium Bifluoride $NaHF_2$	White Powder	95% or 97% NaF • HF	Fibre Drums	Electroplating.
isodium Phosphate $Na_3PO_4 \cdot 12H_2O$ TSP)	Crystal	P_2O_5—18.4%	Multiwall Paper Bags Fibre Drums	Alkali cleaning.
dium Metasilicate $Na_2SiO_3 \cdot 5H_2O$	White Granules	98.5%	Multiwall Paper Bags Fibre Drums	Alkali cleaning.
xalic Acid $H_2C_2O_4 \cdot 2H_2O$	Colorless Crystals	99.5%	Multiwall Paper Bags Fibre Drums	Oxide finishing; metal cleaning.
otassium Fluoborate KBF_4	White Powder	97.0%	Fibre Drums	Aluminum and magnesium casting; as a flux and grain refiner for aluminum; for removing magnesium from secondary aluminum alloys.
odium Fluoborate $NaBF_4$	White Powder	94.0%	Fibre Drums	
mmonium Fluoborate NH_4BF_4	White Powder	96.0%	Fibre Drums	Aluminum and magnesium casting; electroplating.
uoboric Acid HBF_4 + water	Liquid	42.0%	Rubber Drums	Electroplating; metal cleaning or dipping; electropolishing.
ead Fluoborate $Pb(BF_4)_2$ + water	Liquid	51.0%	Carboys	Electroplating.
in Fluoborate $Sn(BF_4)_2$ + water	Liquid	47.0%	Carboys	Electroplating.
opper Fluoborate $Cu(BF_4)_2$ + water	Liquid	45.0%	Carboys	Electroplating.
on Fluoborate $Fe(BF_4)_2$ + water	Liquid	45.0%	Carboys	Electroplating.
lickel Fluoborate $Ni(BF_4)_2$ + water	Liquid	42%	Carboys	Electroplating.

oducts advertised are commercial chemicals having various uses, some of which may be covered by patents, and the user must accept full responsibility for compliance therewith.

OTHER PRODUCTS: Acetic Acid; Ammonium Thiosulfate Solution; Aqua Ammonia; Barium Fluoride; Chromium Fluoride; Copper Fluoride; Copper Sulfate; Glauber's Salt; Iron Sulfide; Nickel Fluoride; Perchloric Acid; Sodium Bisulfite, Anhydrous; Sodium Silicate; Sodium Sulfite, Anhydrous; Stannous Chloride; Tetrasodium Pyrophosphate; Phosphoric Acid; Sodium Tripolyphosphate.

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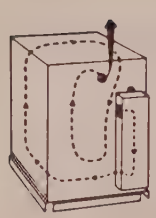
you need... ***BLUEWELD***

Aridair

ELECTRODE
Moisture Content
STABILIZER

LOW HYDROGEN and STAINLESS STEEL ELECTRODE STABILIZER

Specifically designed and engineered to maintain correct moisture content.



EXCLUSIVELY ARIDAIR

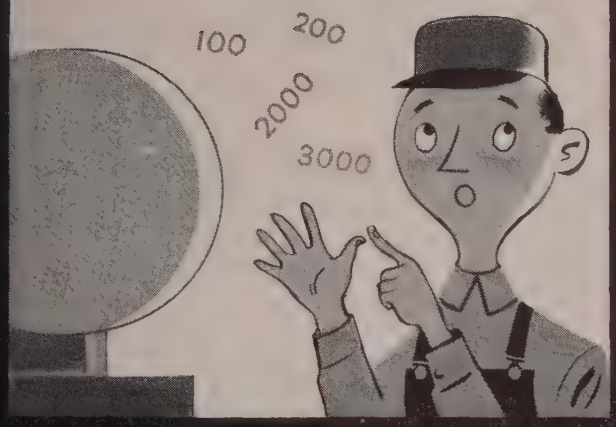
- *Chemically dried air*
- *Shelf circulation*
- *Electrically heated*
- *Thermostatically controlled*
- *Recessed shelving*
- *Rigid construction*
- *Multiple unit stacking*

Write for details

Fred C. Archer, Inc.

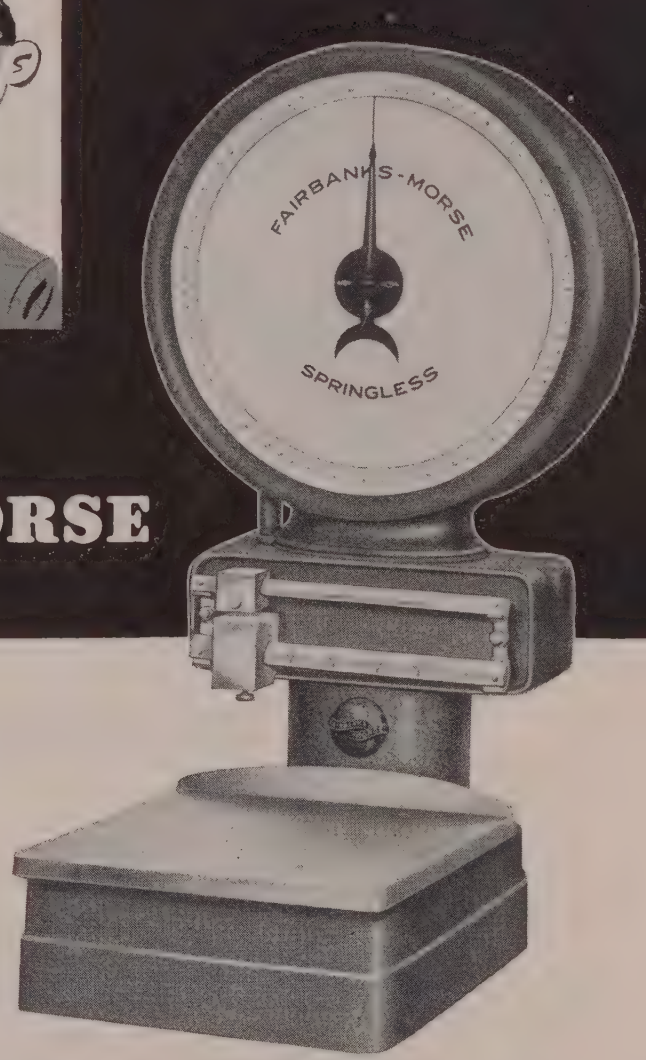
MANUFACTURER
MILWAUKEE 3, WISCONSIN

No "Waste-Time" Weighing...



WITH

FAIRBANKS-MORSE



You speed your weighing operations with Fairbanks-Morse Bench Dial Scales. And that means there are no "bottlenecks" to hold up production all through your plant. Here's why:

With Fairbanks-Morse Bench Dial Scales, weights are read right at the point of the indicator. No time-wasting mental calculations are needed. You can weigh as fast as material can be moved on and off the scale platform. And, easy-to-read charts plus elimination of mental calculations reduce the possibility of human error . . . stop profit-eating weighing losses.

To eliminate "waste time" weighing in your operations, consult your Fairbanks-Morse weighing expert. Or, if you prefer, write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

FAIRBANKS-MORSE,

a name worth remembering

SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • PUMPS
HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY • MAGNETOS

1000 heats without a hole...

WITH PERMANENTE 16

From one of the country's largest steel mills comes this report:

"The Permanente 165 bottom in #19 open hearth furnace producing low-carbon steel is now two years old, has produced 225,000 tons in 1000 heats, and has never had a hole!"

It's another example of the superior performance possible with a Permanente 165 bottom. The odds are that this proved superiority can greatly increase production for *you*.

Among the *20 quality advantages* of Permanente 165 are: high MgO *periclase* derived from high-purity sea water magnesia, and great volume ta- bility because the periclase grains are pre-sh and accurately sized.

SEND FOR BOOKLET giving *all* the important advanta of Permanente 165 and the companion material, Per nente 84. Upon request, your Kaiser refractory engineer promptly offer you research, design and installation ser to help you obtain more steel tonnage per year, at lo bottom cost per ton. Call or write principal sales offi *Chemical Division*, Kaiser Aluminum & Chemical Sales, 1 1924 Broadway, Oakland 12, California. First Natio Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Basic Refractory Brick and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Perici

Mill Roll Manufacturer Reports

PRODUCTION BENEFITS

resulting from high

UNIFORMITY

of Standard rings

exercising precise control of forging and rolling erations, the Standard Steel Works Division assures eater *uniformity* in the structure and analysis of ch ring.

Typical of performance records is a report from a ge eastern manufacturer of mill rolls where Standard gs are employed as thrust rings (inside bearing eways) on the finished roll. Not only do they report 0% saving in cost, but they also find that the grain structure, analysis and precise specification of the steels used in Standard Steel weldless rings is of the highest caliber.

Thus another reason why you should standardize on Standard Steel rings and flanges to protect the quality of your products is the fact that you can be certain of Standard's uniformity in manufacture.

ONE OF SIX REASONS why you should always call Standard Steel for rings and flanges.

Quality Steel—through production of own steel by acid process.

Uniformity—assured by precise control of forging and rolling erations.

3. Testing—radiographic tests, tensile tests, hardness tests, ultrasonic probing of internal structure, etc.

4. Capacity—unsurpassed ability to produce weldless rings all the way up to 144" O.D.

5. Experience—produced by skilled workmen with 20 to 40 years experience.

6. Fast Service—a vital factor in the continuing growth of Standard Steel for over 150 years.

For more information write Dept. 8546

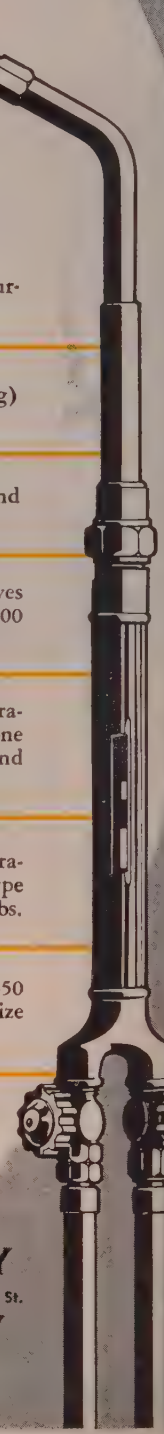
Standard Steel Works Division

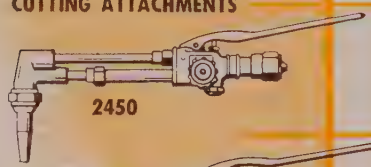
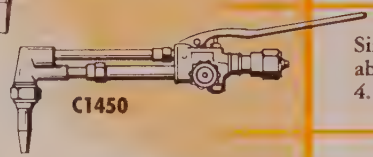
BURNHAM, PENNSYLVANIA

BALDWIN-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

Which of these most popular models by VICTOR *best fits your needs?*



300 SERIES WELDING TORCHES	DESCRIPTION, APPLICATIONS
315	A compact 18-oz., 9-inch torch ideal for general purpose welding and cutting.
310	A medium weight and length torch (21 oz., 11" long) for all around use.
300	A long (14") torch for users of larger welding and heating nozzles; weight 24 oz.
HD 310	Heavy duty models with high capacity fuel gas valves for large gas flows. HD 310—11" long, 28 oz. HD 300—14" long, 32 oz.
P 310	Especially designed for pipeline and similar operations. Gas control valves, at forward end, permit "one hand" adjustment with thumb and forefinger of hand holding torch. 9" long, 22 oz.
CUTTING ATTACHMENTS	
 2450	Handles a full range of general purpose cutting operations up to approximately 8". Uses "Standard" type cutting tips up to size 5. Length is 13"; weight, 2 lbs.
 C1450	Similar in size, weight and construction to Model 2450 above, but designed for smaller "C" torch tips to size 4. Cuts to approximately 6".

Look for the Victor dealer sign!

—Ask him to show you why it *pays* to standardize on VICTOR.

Dealer Inquiries Invited

VICTOR for welding

VICTOR EQUIPMENT COMPANY

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LOS ANGELES 58 SAN FRANCISCO 7 CHICAGO 7

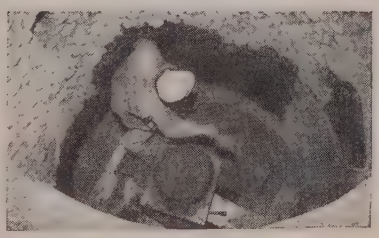
#1

ohns-Manville Insulations save industry a billion dollars in fuel every year!

Reduce your fuel costs and build better furnace linings with JM-3000 INSULATING FIRE BRICK

RE'S THE ONLY insulating fire brick th withstands a full 3000F. It's highly ef ient both as an exposed refractory li ng or as back-up insulation. And J 3000 is only one of six types of Jo ns-Manville Insulating Fire Brick m le for these applications. All pro- vi long-life insulation. All are light in eight, have low conductivity, high st ctural strength. These properties p mit thinner furnace walls—yet you c achieve important fuel savings a increased production, because J- Insulating Fire Brick assures qu k furnace response.

l-O-Cel* Insulating Brick is an- ot r outstanding J-M fuel-saver . . . a hi load-bearing brick for back-up in- su tion behind refractory linings. It co es in three types, for service through 2 0F—makes it possible to reduce the ne ssary thickness of refractory linings as uch as one-third.



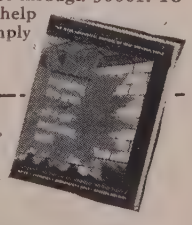
Save fuel with J-M Hydraulic Setting Refractories

Johns-Manville refractories meet every need for castable, troweling and gunning applications for temperatures through 3000F. *Firecrete** is used to cast special shapes of all kinds. It is ready for use within 24 hours, has negligible shrinkage and high resistance to spalling. *Blazecrete** is used to build and repair furnace linings. When gunned, it adheres readily with a minimum of rebound loss. When slap-troweled, it eliminates laborious ramming and tamping.

Save Fuel with J-M Aggregates and Fills

These lightweight insulations are used as fills to conserve heat in irregular spaces where other forms of insulations cannot be economically applied. They are also used as aggregates for mixing with other materials to form insulating refractory concrete. *Reg. U. S. Pat. Off.

Send for your free copy! This new booklet IN-115A gives full details about J-M insulating materials for service through 3000F. To find out how they can help cut your fuel costs, simply mail coupon.



MANVILLE

PRODUCTS

Johns-Manville FIRST IN INSULATION

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Please send me, without charge, copy of brochure IN-115A

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Company_____

Street_____

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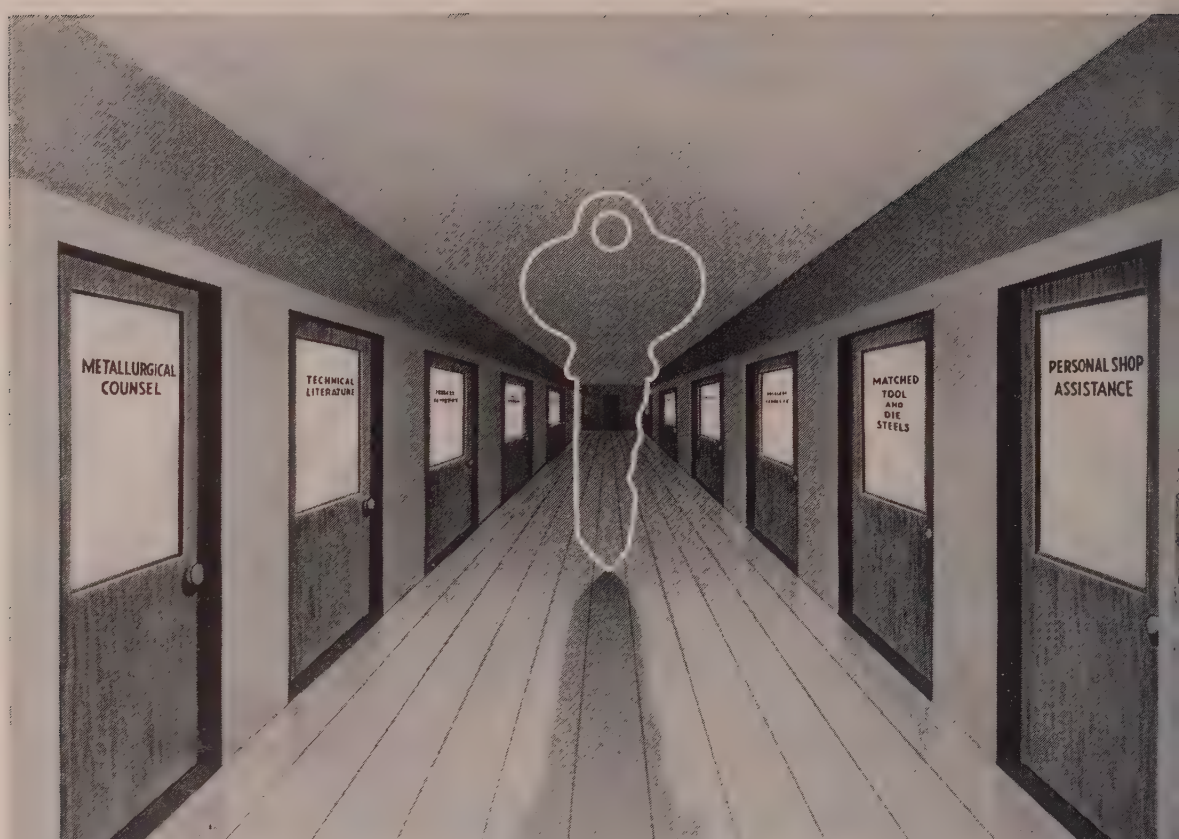
ST-3



YOU HAVE THE KEY THAT OPENS ALL THESE DOORS

The "key" is your telephone. It opens all these doors . . . puts you in immediate touch with many services designed to help you hold production costs in line, make your job easier, eliminate a lot of headaches. Here's why:

A call to your Carpenter MILL-BRANCH Warehouse or Distributor puts you in touch with one of the most comprehensive steel services ever devised. You get quick information on prices, sizes, grades . . . personal job assistance that eases production headaches...professional Metallurgical Counsel direct from the Reading Mill . . . printed technical information that helps protect your steel investment.

Best of all, here's a service backed by a team of *specialists*—experienced people who sincerely want our business and will do everything humanly possible to merit it.

If you want *more* than just ordinary steel service, get on the phone, just for a test, call your Carpenter MILL-BRANCH Warehouse, office or Distributor, now.

The Carpenter Steel Co., 139 W. Bern St., Reading, Pa.

Carpenter STEEL

Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY and STAINLESS STEELS

window shopping costs nothing...
can save you plenty

It pays to "shop around" before you make your power transmission or conveyor chain selections. Because, in order to get the most for your money, you need the right chain for your machines. For example, a precision-finished roller chain is ideal for high speed drives. But, roller chain is not the economical, efficient choice for slow speed, heavy-duty service. A heavy-duty steel or cast chain may be your answer here. That's why it will pay you to "shop" through the *complete* Chain Belt line before you make your choice. There's a size and type to fit any power transmission or conveyor need.

Don't be handicapped by relying on a supplier with a limited line to answer all your needs. It may cost you more... may handicap the expected performance of your machines.

Your Chain Belt Field Sales engineer will be happy to assist you in making the exact chain selection that best fits your requirements. He is not prejudiced by the limitations inherent in an incomplete chain line... can recommend the chain that will give you the service you want... at the lowest possible cost. For complete information or engineering assistance, mail the coupon.

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Gentlemen:
Please send me information on Rex and Baldwin-Rex chains
☐ For Power Transmission ☐ For Conveying ☐ For Tension Linkages
☐ Slide rule drive selector for slow to medium speeds

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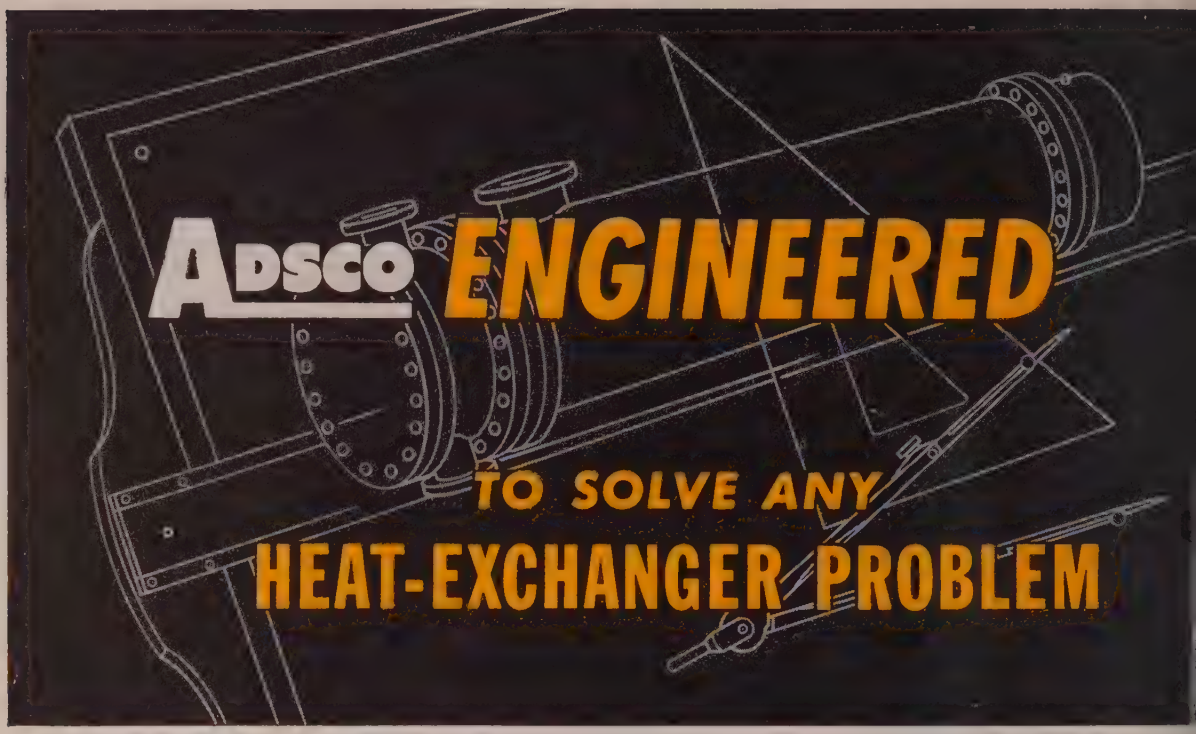
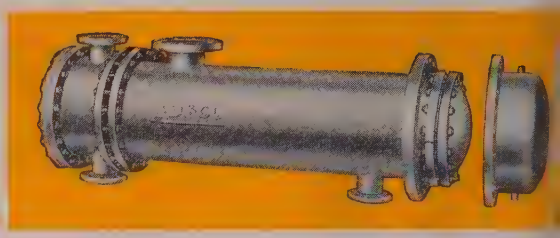
Company.....*Dept.*.....

Address.....

City.....*State*.....



Standard-design or tailor-made, ADSCO heat exchangers are engineered and manufactured to fit the exacting needs of ADSCO's industrial customers. Upon receiving a set of thermal conditions from a customer, ADSCO first applies its many years of experience to the design of the exchanger. And then into the manufacture goes all the know-how which ADSCO has acquired during its 75 years. The result is an exchanger which is not "almost right" but exactly right, a unit of the utmost efficiency... Investigate this specialized ADSCO service. You'll find it is low-cost, yet everywhere carries the ADSCO mark of quality which since 1877 has made ADSCO a leader.



A type of ADSCO heat exchanger widely used in industrial pla is the float-head, split-ring heat exchanger shown above. It is us for heating, cooling, or condensing, or for a combination of th Shells can be of steel or a non-ferrous metal with either steel non-ferrous tube sheets. Tubes of the removable tube bundle v in size from 5/8" O. D. to 1¼" O. D. The pitch can be square rectangular, depending on the fouling conditions and cleaning re quirements. ADSCO heat exchangers are manufactured in con mity with ASME code for unfired pressure vessels.

ADSCO ENGINEERED PRODUCTS

Expansion Joints . . . Separators . . . Meters . . . Steam Traps . . . Heat Exchangers . . . Strainers

AMERICAN DISTRICT STEAM COMPANY, INC.

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Since 1877

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WHAT HAPPENS TO A JOHNSON UNIVERSAL BRONZE BAR

Every Application Saves Time and Money!

IN ADDITION to the common uses, bushings, bearings, washers and thrust plates, certain manufacturers are making bronze gears, sheaves, trolley wheels, rollers, guide rolls, air tool tips, etc., from Johnson Universal Bronze. There are reasons for wider use of this material: ease of machining, corrosion resistance, non-sparking properties, long life, less frequent replacement . . . to mention a few.

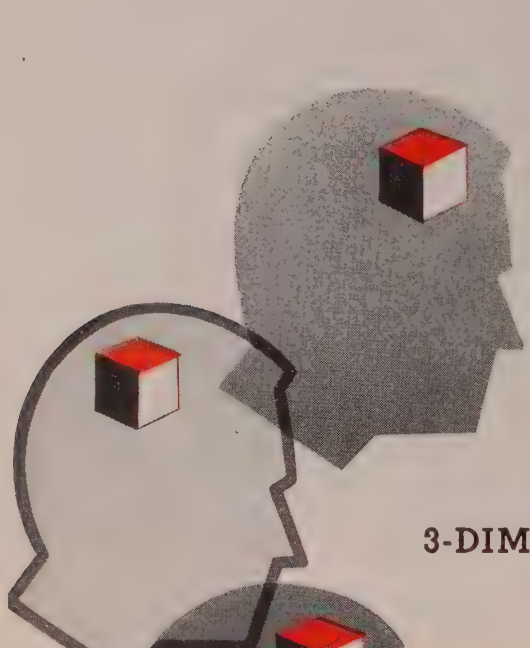
Johnson Universal Bronze is available from distributors' stocks in over 400 sizes. Round bars, solid or cored, are completely machined, OD, ID and ends, and are usable from end to end . . . no waste. Hexagon bars, not machined, are made in a range of sizes, too. Investigate the possibilities of using Universal Bronze for special applications in your industry. Write for catalog, showing sizes available.

JOHNSON BRONZE COMPANY
550 South Mill St., New Castle, Pa.

Over *400* Sizes

Stocked by your local JOHNSON *distributor*

JOHNSON B BEARINGS
Sleeve-Type
Sleeve Bearing Headquarters Since 1901



COST

PRODUCTION

GRADE

REPUBLIC'S 3-DIMENSION METALLURGICAL SERVICE

helps you solve your steel problem

• You may be trying to finalize the choice of grades of alloy steel f new product . . .

Or wondering if your present product is taking full advantage of the steels you are now using . . .

Whether it's a new product or a well-established one, you may be ab make it stronger or better or to reduce production costs by calling Republic Field Metallurgist to discuss problems of alloy selection and duction with your metallurgical and manufacturing men.

The Republic Field Metallurgist is backed-up in his recommendations by a Republic Mill Metallurgist and a Republic Laboratory Metallu Together they offer a complete and extensive consulting service to users . . . Republic 3-Dimension Metallurgical Service. Available t through your local Republic Steel sales office.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

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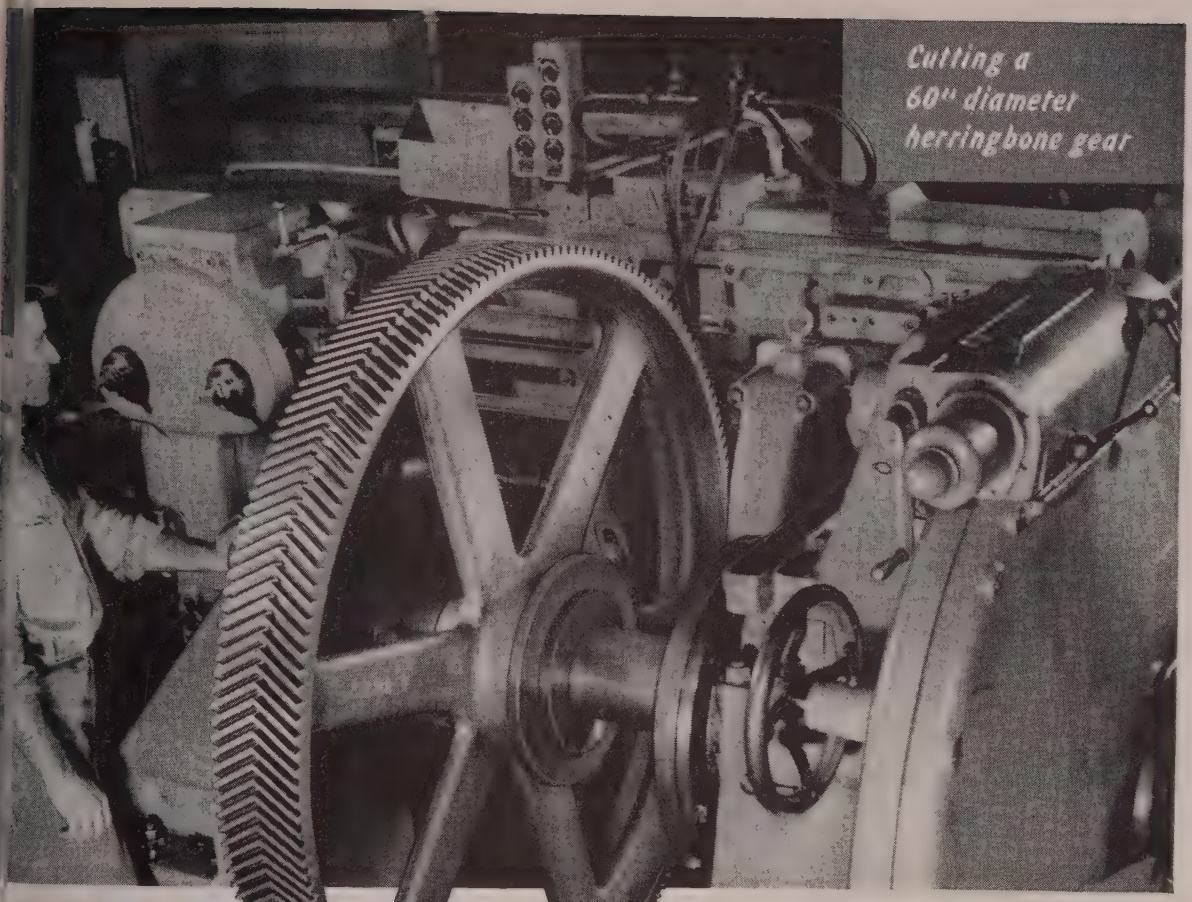
FIELD MILL 3-DIMENSION Metallurgical Service

. . . combines the extensive experience and coordinated abilities of Republic's *Field, Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage. IT CAN DO THE SAME FOR YOU.

REPUBLIC STEEL

Republic ALLOY STEELS

Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts,



Herringbone gears

Cutting a big herringbone gear like this isn't particularly difficult —that is, if the right equipment and experienced operators are available. Here at BRAD FOOTE we have a happy combination of efficient machines and capable men to cut any size, any type, or any quantity of herringbone gears you might need.

• Then comes the finishing. Your specifications may call for heat-treating, flame or induction hardening, or perhaps shot-peening. All these and other special processes are available in BRAD FOOTE'S own shops. We control every operation on every gear, gearmotor, transmission, or assembly which you order from us. No one shares our responsibility.

• Close attention to details, complete manufacturing facilities, careful inspections, and strict adherence to specifications are your assurance of high quality in all BRAD FOOTE gears. So you can order with utmost confidence the gears you need for your own use or for resale on equipment you make for others.

• Next time you need gears, send us the specifications so we can quote you promptly.

BRAD FOOTE GEAR WORKS, INC.

1309 South Cicero Avenue • Cicero 50, Illinois
Bishop 2-1070 • OLympic 2-7700

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AMERICAN GEAR & MFG. CO. • Phone: Lemont 920 • Lemont, Illinois

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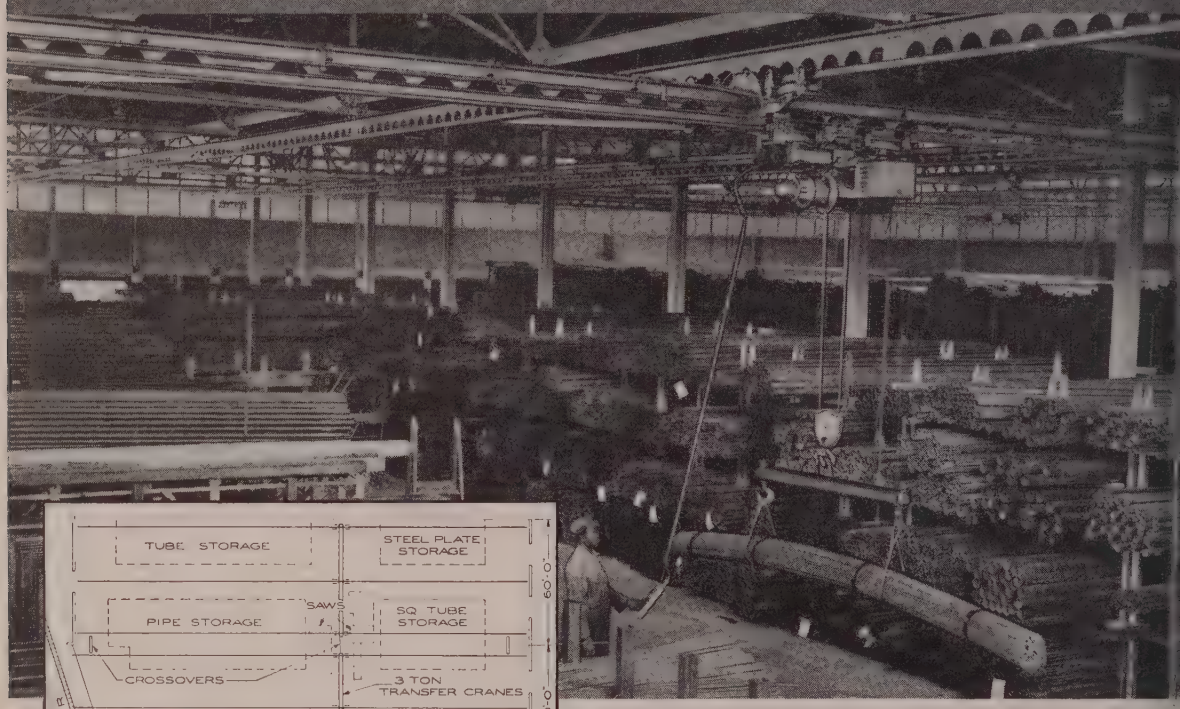
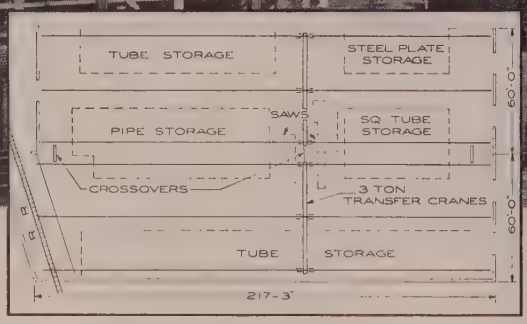
TRAMRAIL TRANSFER CRANES SYSTEMATIZE HANDLING IN STEEL WAREHOUSE





The large storage area is completely covered by Tramrail crane service. Every item can be seen from the floor and readily reached with the two transfer cranes.

The Tramrail transfer cranes make it easy to place the long unwieldly pipes and bar stock into storage at any height. This makes for orderliness, which is an important factor in securing high operating efficiency.

THE BIG modern warehouse of J. M. Tull Metal & Supply Co., Atlanta, Georgia, was designed to make use of overhead Tramrail equipment to enable the handling of large unit loads in and out of storage with the least effort and in the quickest time.

The principal storage section is provided with two parallel runways each having three tracks. On both runways is a 64-foot transfer crane that travels the length of the room. Cross-overs are provided, enabling a hoist carrier transferring from one crane to the other. This makes it possible to haul materials between any two points in the entire area without rehandling.

Steel is constantly on the move in this active plant. From 60,000 to 70,000 lbs. are brought in by railroad car daily and like amounts are shipped out. The material is unloaded from railroad cars at one end of the building and placed into storage. It is shipped out on trucks which are loaded at the other end.

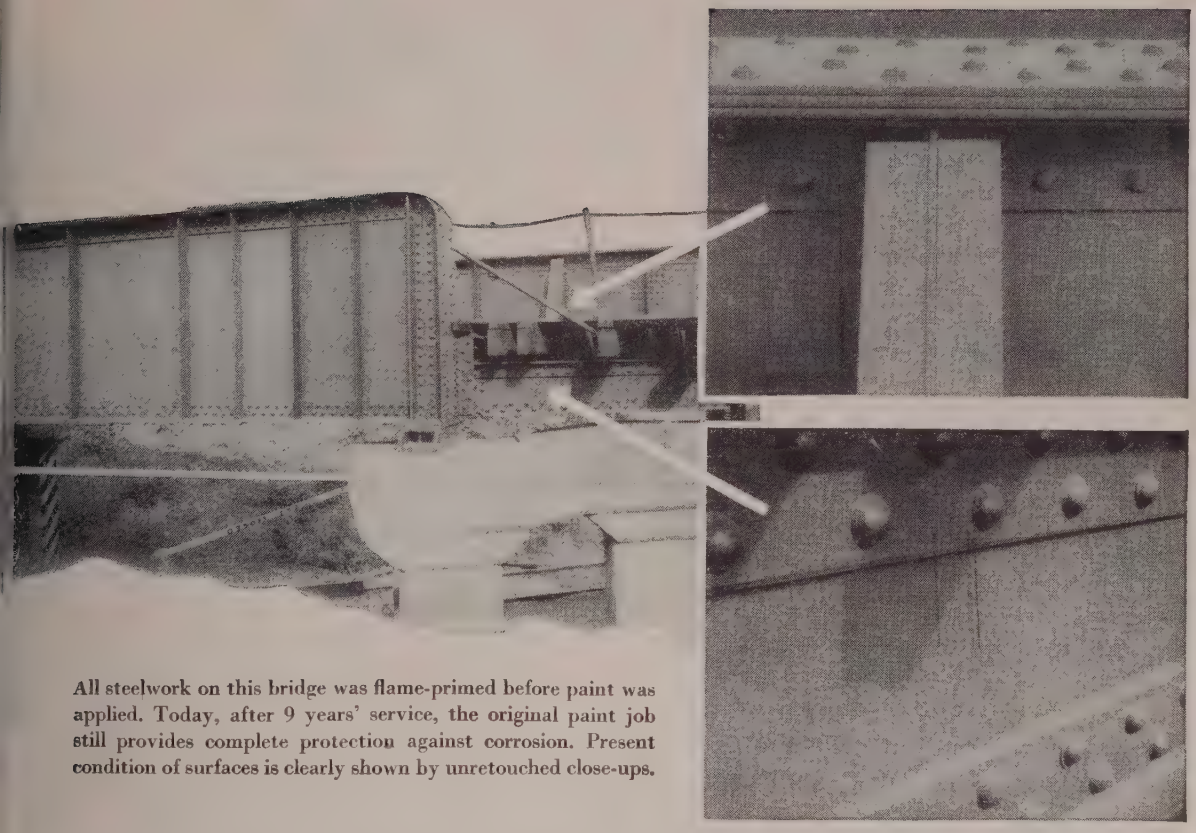
The overhead crane system makes it possible to place incoming materials into allotted storage spaces at once. The need of storing temporarily in aisleways or other areas and extra handling which this entails is eliminated. Thus, the warehouse is kept orderly at all times and every item is readily seen and conveniently reached. Danger of handling accidents is minimized and overall efficiency is unusually high.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7881 East 284th Street, Wickliffe, Ohio

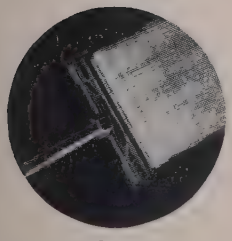
CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT



All steelwork on this bridge was flame-primed before paint was applied. Today, after 9 years' service, the original paint job still provides complete protection against corrosion. Present condition of surfaces is clearly shown by unretouched close-ups.

Your Steelwork . . .

How Will It Look in 1960?



Steelwork you coat with good paint today can still look like new ten years from now, *if you flame-prime all exposed surfaces first.* And what you'll save on maintenance, because of increased protection due to flame-priming, will more than pay for all the flame-priming apparatus and materials you need for the job.

Flame-priming is simple to do, requires little equipment, and costs little. A brush of oxy-acetylene flames pops off scale and drives out moisture. Paint applied to the warm, dry surface goes on quickly and smoothly, bonds tightly, and lasts longer.

Flame-priming is one of many time- and money-saving LINDE methods for making, cutting, joining, treating, and forming metals. So, whatever you do with metals, there is a good chance that LINDE know-how, show-how, and equipment can help you do it better, more quickly, or at lower cost.

To find out, without obligation, telephone or write our nearest office today. LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in Other Principal Cities. In Canada: Dominion Oxygen Company, Limited, Toronto.

Linde Trade-Mark

Products and Processes for MAKING, CUTTING, JOINING, TREATING, AND FORMING METALS

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.

Have you investigated

"BORON STEELS"

as a ready means to increased hardenability?

Farm equipment and earth-moving machinery manufacturers are using boron steels for axles, spindles, drive gears and many other heavy section parts.

Boron steels—used for pinions, shafts and heavy-duty gears for air-cooled engines—are helping to meet new requirements in the aircraft industry.

In gears, pinions, axles, springs and many other automotive parts, older grades of alloy steels are now being replaced by boron steels.

Boron steels are enabling manufacturers of hand tools and shop equipment to make significant cuts in their annealing costs.

Millions of tons of boron steels made with Vancoram GRAINAL Alloys are now in service.

These steels are doing many of the jobs formerly done only by the older grades of higher alloy steels. They contain, however, far smaller amounts of critical alloying elements—because GRAINAL Alloys replace these elements with respect to hardenability.

If you are having trouble getting steels with the hardenability you require, investigate boron steels today.

Ask your steel supplier for complete information.

VANADIUM CORPORATION OF AMERICA

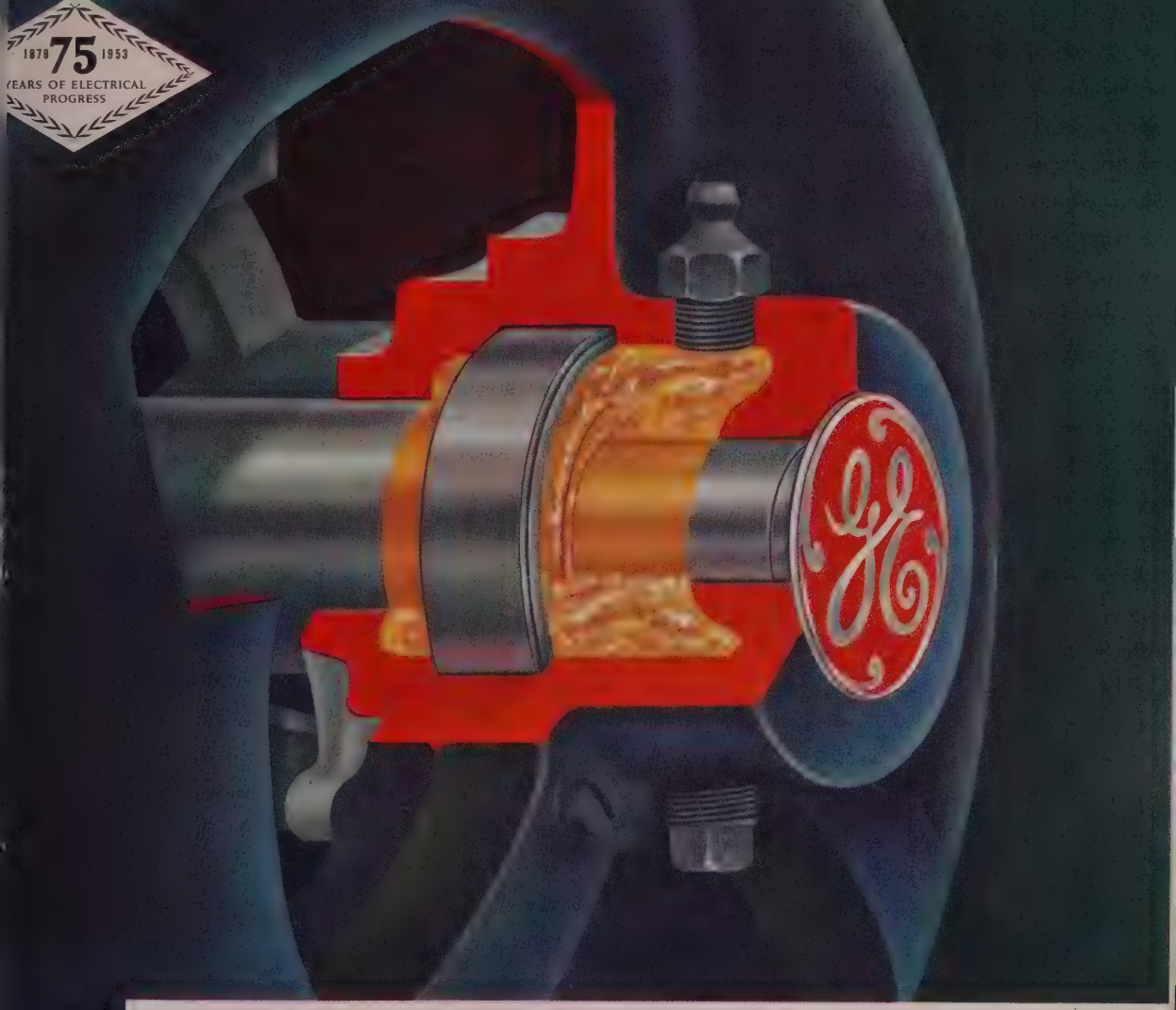
420 Lexington Avenue, New York 17, N. Y.

DETROIT • CHICAGO • CLEVELAND • PITTSBURGH

VANCORAM

Producers of alloys, metals and chemicals

1878 75 1953
YEARS OF ELECTRICAL PROGRESS



These bearings last longer than life . . . grease life

G-E TRI CLAD MOTORS LAST LONGER

REG U.S. PAT. OFF

ALL GREASE LIFE IS LIMITED. The best known greases dry out in time. This may be six months, seven years, or longer, depending on motor application.

SOME MOTORS ARE USELESS WHEN GREASE DRIES OUT. They can't be regreased, you lose production time . . . because your maintenance man is "sealed out."

BUT GREASE LIFE NEED NOT LIMIT MOTOR LIFE. Tri-Clad motors give long life without relubrication, plus provision for adding new grease when necessary.

ADDED GREASE IS USEFUL GREASE. Relubrication puts fresh grease in storage in bearing housing . . . as motor operates, grease oils migrate to bearing as needed.

TRI-CLAD MOTOR BEARING IS EASIEST TO REGREASE. Do it on the job, with motor running . . . no dismantling . . . no trip to a service shop.

TRI-CLAD MOTOR BEARING IS BETTER PROTECTED. Completely enclosed housing has *longer seals* to keep dirt out, *larger grease supply*, and *scientific design* for continual grease migration.

THIS PRACTICAL BEARING DESIGN is one more reason why G-E Tri-Clad motors give better service . . . added life. Order through your nearby G-E Apparatus Sales Office or authorized G-E agent or distributor. General Electric Company, Schenectady 5, N. Y.

752-18

You can put your confidence in—

GENERAL ELECTRIC

EASTON simplified production

and improved product with this

CINCINNATI

Press Brake

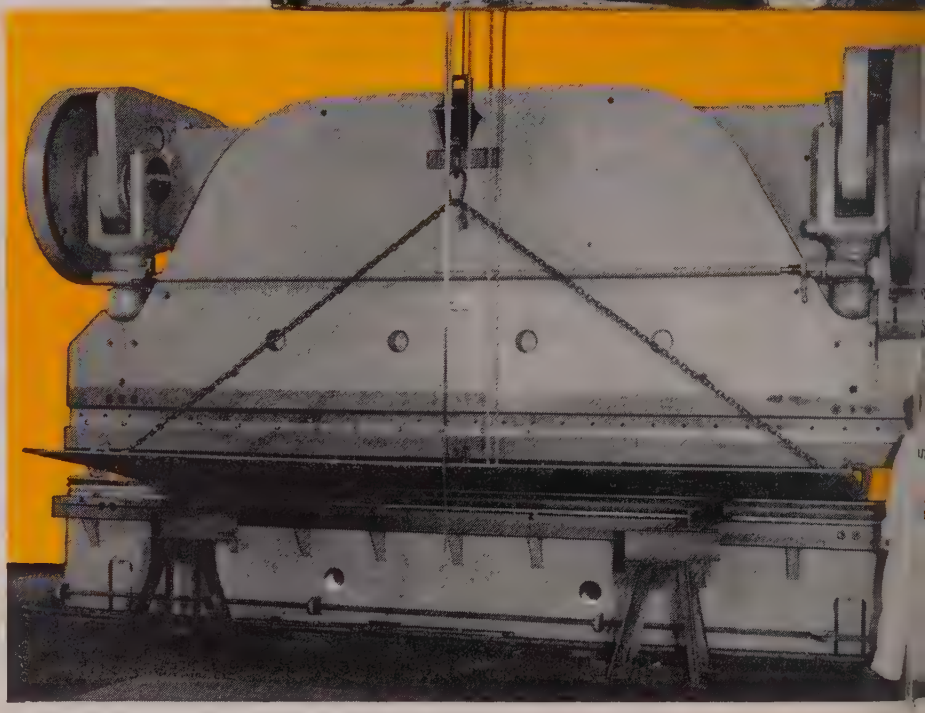


Illustration courtesy Easton Car & Construction Company, Easton, Pennsylvania.

Automatic Side Dump

Rocker Dump Car

Cradle Trailer

Lift Truck Dump Bodies

Here a Cincinnati Press Brake is forming ½" plate for wide sections of off-high[way] trailers, at the Easton Car & Construction Company, makers of a large lin[e of] products for industrial transportation.

By using this Cincinnati Press Brake, some welding operations were elimin[ated], which improved the product, and reduced production costs at the same [time].

The power, accuracy, and versatility of Cincinnati Press Brakes are red[ucing] manufacturing costs wherever they are installed. If you form, or bend [you] should investigate their possibilities.

Write for Press Brake Catalog B-3.

CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

March 16, 1953

Aluminum Stockpiling

While the Office of Defense Mobilization is insisting on immediate resumption of aluminum stockpiling, care will be taken to insure minimum disturbance to consumers. ODM aluminum officials are conferring with the three major producers on ways and means to avoid distress, especially to small users. Conferees hope to avoid stirring up an investigation by the House and Senate small business committees.

More Electric Power

Electricity well could become the substitute for a billion barrels of oil by 1975, says George A. Lamb, Pittsburgh Consolidation Coal Co. The shift to electricity is expected on a more rapid basis by 1960. Electrical home heating will be regarded as a necessity by 1975.

Score for Economy

First appropriations bill passed by the 83rd Congress (the second supplemental appropriations bill for fiscal 1953) was an important victory for the economy bloc. Although the Senate added $22 million to the House version--a difference to be ironed out in conference —the total was only 40 per cent of the amount requested by former President Truman before he left office.

Back to Normal

Machine tool deliveries are, generally speaking, back to normal for the first time since Korea. A handful of companies making critical machines for the armament program still have large backlogs, but most builders' backlogs average nine months. Metalworking companies needing new equipment can get prompt attention from the builders.

Coal's Answer to Oil

Contract between Bituminous Coal Research Inc. and the American Locomotive Co. calls for the development by Alco of a coal-burning gas turbine for commercial applications, particularly for locomotives. Alco also will design a locomotive chassis. Research on the coal-burning gas turbine was started at the end of World War II.

T-H Hearings Extended

The House Committee on Education and Labor will stretch Taft-Hartley Act hearings through April. The committee's chairman, Samuel K. McConnell Jr. (Rep., Pa.), wants a very thorough discussion so that everyone will have a chance to tell his story.

Civilian Work More Profitable

Defense business is considerably less attractive than commercial business from the standpoint of return to shareholders, General Mo-

ction-Engineering News—p. 95 The Market Outlook—p. 175

tors points out in its annual report. The corporation, a top defense contractor, hastens to add that service to the country, not return, is the proper yardstick for measuring defense contracts. When defense needs slacken, the corporation is confident enough civilian needs will exist to keep the economy ticking at a satisfactory level.

Lease Half a Trip

Metalworking companies may benefit in lower trucking costs if Congress lifts the ban on "trip leasing" of motor trucks. System provides a shipper may lease a truck to carry a load to its destination without incurring any responsibility for the return trip. Practice was banned two years ago by the Interstate Commerce Commission. Now a bill (S.925) to revoke the ban is being considered by the Senate Interstate Commerce Committee.

Los Angeles Calling

Los Angeles ranks second only to Detroit in automobile production, says Don A. Ringis, Chrysler's western manager. Productive capacity is being built up rapidly; Chrysler tripled size of its plant in the past 18 months.

Catalog Draws Probers

A House armed services subcommittee will start hearings today on charges that work of the defense supply management agencies in preparing a single military supply catalog is not progressing with sufficient rapidity.

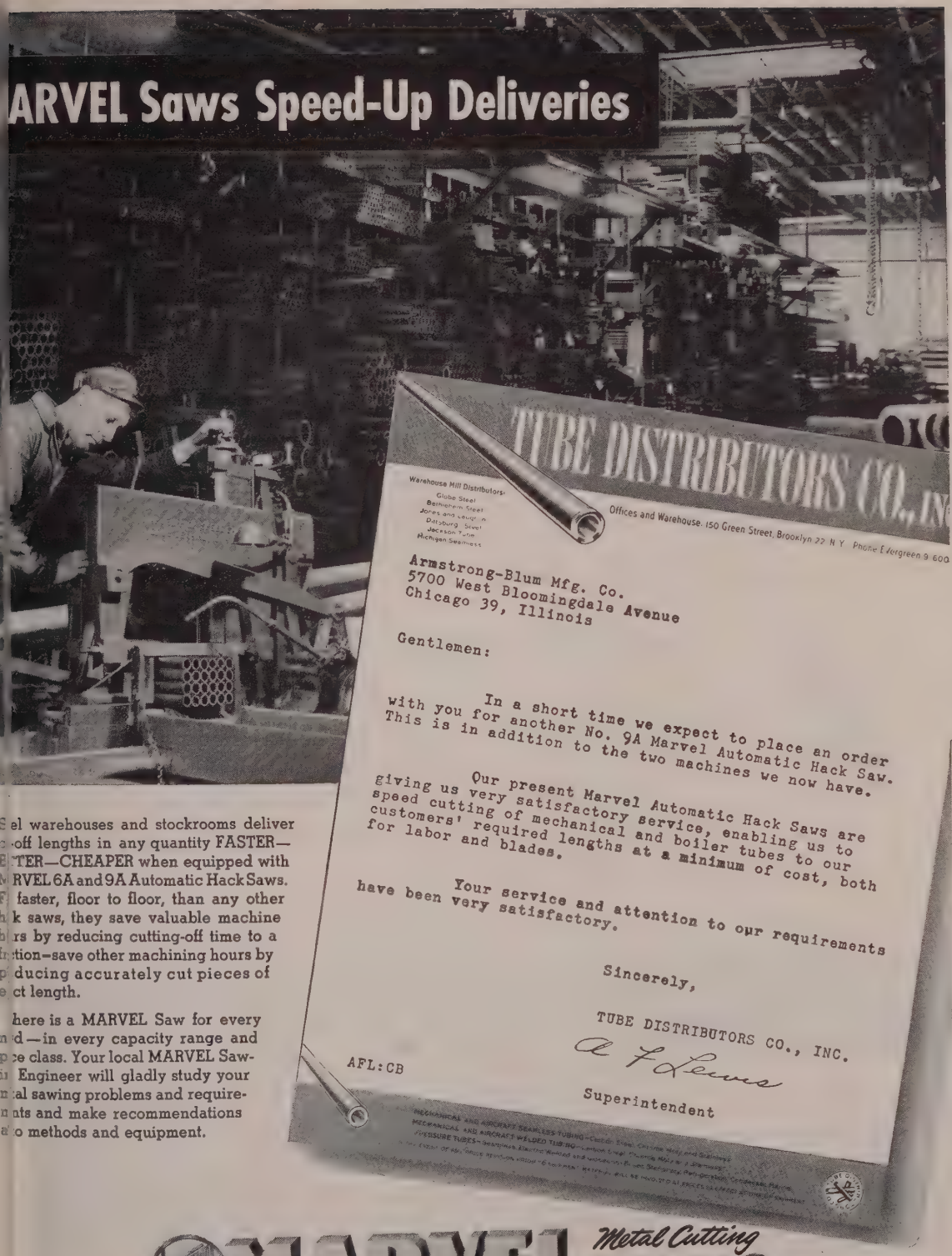
Straws in the Wind

Hearings on United States participation in the St. Lawrence Seaway project are scheduled before a Senate foreign relations subcommittee Mar. 23-25 . . . Stewart-Warner last week produced and delivered to the Army its 7,500,000th M-48 shell fuze . . . Watch for stronger organization drives by CIO unions as new leaders attempt to make a name for themselves . . . Social security goals will be extended in union demands, particularly against the smaller companies . . . The National Production Authority is expected to remain in the Commerce department.

What Industry Is Doing

The "Defense Materials System"—a modified program of controls—will provide materials for military and atomic energy project usage after June 30 (p. 67) . . . Industry must spend $200 billion on new facilities by 1960 to maintain the present standard of living, predicts Dean E. Carson, business research director, B. F. Goodrich Co. (p. 68) . . . Sales of plastic forming presses may jump 100 per cent to $30 million during 1953 (p.69) . . . Demand is insistent for straight chrome stainless steel as more gleam goes on autos (p. 70) . . . Automakers may spend $215 million in premiums on prices to get steel this year if auto output and steel availability remain at present levels (p. 71).

ARVEL Saws Speed-Up Deliveries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Your service and attention to our requirements have been very satisfactory.
Sincerely,
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AFL:CB
Superintendent

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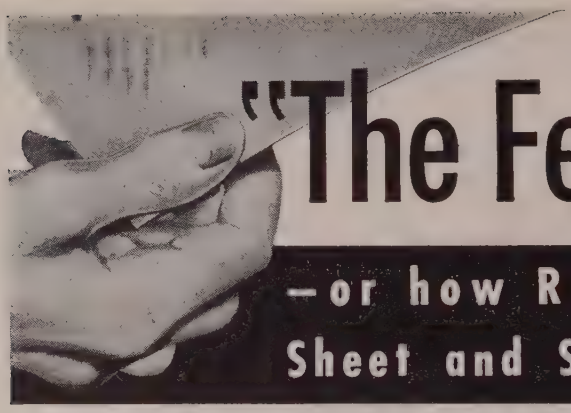

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The New Threat

Action of the Kremlin in announcing the principal leaders in the government of Soviet Russia within less than 24 hours after the report of Premier Stalin's death poses questions of great concern to every nation that is opposed to Communism.

From the standpoint of the United States, the pertinent question is to what extent the announced transition of power will affect our economy. What does the appointment of Georgi Malenkov mean to our defense effort? What does this change in leadership mean to the metalworking industry?

Nobody knows the answer at this early date, but we can consider a number of possibilities. One plausible theory is that the Kremlin will be so preoccupied with the problem of establishing Malenkov as the successor of Stalin that there will be a lull in the cold war. If this happens, the United States and her allies will not be foolish enough to relax their program of preparedness.

A second possibility is that the transfer of power from Stalin to Malenkov can be accomplished smoothly. This would be a miracle, but if it can be done we still would not relax defense efforts.

A third possibility is that Malenkov, threatened by dissension, might provoke World War III in order to divert attention from internal conflict. This is unlikely, but the very thought of it will tend to intensify our defense effort.

The fourth possibility is that Malenkov's ascendancy to power will be challenged, that the influence of the Kremlin will deteriorate, that satellites will rebel and that the Soviet Union will disintegrate. Hundreds of millions of persons on both sides of the iron curtain are praying for this. Should it happen, the effect would not be an immediate curtailment of our defense activities. We would be faced with a policing job almost as demanding as our present cold war commitments.

Thus, under any combination of circumstances of which we can conceive, Stalin's death calls for a continuance, rather than a step-down in our preparedness program.

E. C. Shaner

EDITOR-IN-CHIEF

ASKING FOR SOCIALISM: Speaking before the Public Utility Buyers' Group of the National Association of Purchasing Agents in New Orleans last Tuesday, Henry J. Wallace, vice president-sales, National Tube Division of U. S. Steel Corp., drove home a strong argument against unwarranted government controls on the distribution of steel.

He declared that "a real danger lies in those who expect decontrol to be an immediate cure-

all for their civilian procurement problems. When they discover that many of these tight situations continue to exist, their first impulse may be to rush to Washington and promote a control system all over again. In so doing they will be, however unwittingly, underwriting another step toward Socialism."

Free distribution—uncontrolled buying and uncontrolled selling—he contended, is the key factor in our free enterprise system. "If in a civilian market distribution controls are regarded as being necessary because of an apparent shortage of steel, by the same reasoning an apparent oversupply of steel would require buying controls to insure that all mills operated at the same percentage of capacity."

This is an angle that has been overlooked by many persons. It is important.

* * *

TUBE CAPACITY AMPLE: Mr. Wallace also took occasion to spike the charge that the expansion program of the steel industry has been unbalanced in that not enough pipe mills have been built relative to the overall increase in steel capacity. He declared and proved that this accusation is without foundation.

By the end of 1953, pipe and tube capacity will reach 13,800,000 tons annually—an increase of 65 per cent since the end of World War II. During the same period, steel ingot capacity has increased 31 per cent. A point to remember is that since the Korean war broke out, tubular production never has equaled capacity. Output in 1950 was 85 per cent of capacity, in 1951 it was 81 per cent and in 1952 only 68 per cent. The explanation, of course, is that there is more finishing capacity than there is basic steel capacity.

* * *

LARGE SITE REQUIRED: Last week before the Public Utility Buyers' Group in New Orleans, Walker L. Cisler, president of the Detroit Edison Co., explained the Dow-Edison project, in which Dow Chemical and Detroit Edison are engaged jointly under a contract with the Atomic Energy Commission to study the application of atomic energy to the generation of electric power.

He envisioned a power plant in which reactors burning fissionable materials as a fuel, with appropriate accessories, would take the place of the boilers and appurtenances of the conventional steam-electric station. The electric generating part of the plant, containing steam turbine generators and related equipment, would be retained essentially in its present form.

A startling aspect, mentioned by Mr. Cisler, is that for safety reasons an atomic energy power plant may require a site of as much as 100,000 acres, instead of the conventional 100 acres.

* * *

GIVE IT A REAL TEST: A pre-election plank of the Republican party was amendment of the Taft-Hartley Act. Since Jan. 20 when the Eisenhower administration assumed office, progress toward fulfillment of this pledge has been practically nil. The Department of Labor's Advisory Committee, consisting of representatives of the public, unions and employers, has been unable to agree upon a program of procedure.

Meanwhile, hearings on amendment to T-H are being conducted by the House Committee on Labor. Last week it appeared likely that representatives of the administration and of the House and Senate Labor Committees will not press for the drafting of amending legislation until the hearings have been completed.

The delay may be irksome to many persons, but one wonders what would happen if T-H, after having been virtually scuttled by misadministration, were to be administered for a few months in the manner in which Congress intended.

* * *

THIS IS WORTHY CAUSE: J. C. Penney, chain store merchant; Paul C. Stark, Missouri nurseryman; and Dr. George Benson, president of Harding College, have been visiting numerous cities under the auspices of the National Council for Community Improvement. In these visits, they are pleading with their countrymen to help the federal government to reduce its budget. They simply urge: "Don't ask the administration in Washington to do anything that should be done by state and local authorities."

This is a worthy cause. In almost every community cumbersome federal agencies are performing functions that either are unnecessary or, if necessary, could be performed much better under the direction of local authority. The work of the National Council for Community Improvement merits the support of manufacturers in every industrial community.

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Like the bar in this picture, *every bar* of Ryerson alloy steel has its mark—a symbol that identifies the particular heat from which the bar was rolled. And on all but the smallest bars this heat symbol is unmistakably stamped into the steel itself.

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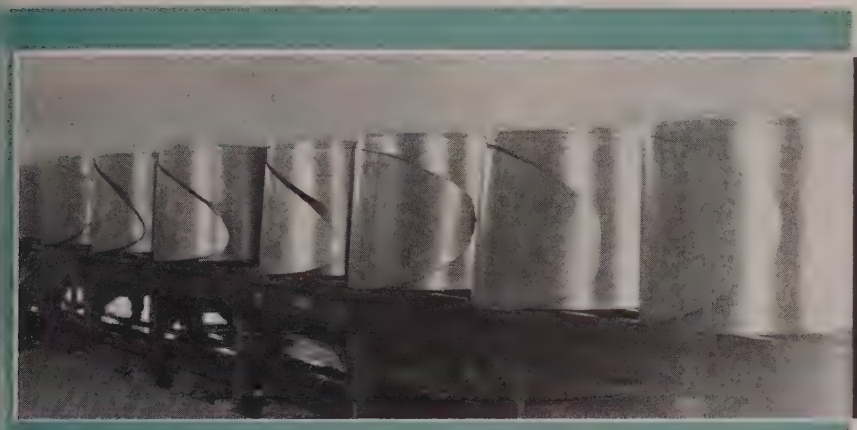
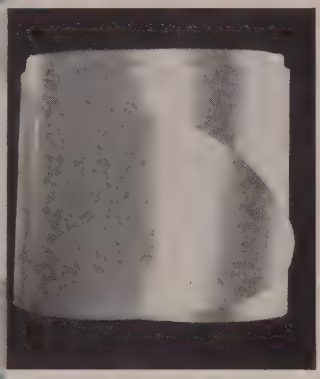




After midyear, you can bid for 88 per cent of the steel, 80 per cent of the copper and 70 per cent of the aluminum in a free market. Only the direct defense and AEC requirements will be earmarked

Freer Market for Metals

Only materials for direct defense and atomic energy needs to be controlled after June 30 under new Defense Materials System. Red tape will be cut

:RE'S HOW government controls materials will look after June :

There will be a modified con-lled materials plan to provide terials for military and atomic ergy programs. It will be known the "Defense Materials System." essence it is a "little CMP," for is a plan for controlling mate-ls, but not on such a broad scale under the full-fledged Controlled aterials Plan that has been in fect the last couple of years.

Red Tape Cut — Rules of the MS will be set forth in a single gulation, as contrasted with the merous regulations issued by the itional Production Authority un-r the present Defense Production ct.

The new DMS will be announced the Office of Defense Mobiliza-on as soon as the regulation is ritten; that, according to the pres t schedule, should be Mar. 20. The DMS will need authoriza-on by Congress, but Acting efense Mobilizer Arthur S. Flem-ming expects quick approval there after submission of the legislative request this week. Consequently, plans are afoot to give details of the new DMS to producers and consumers without delay.

When it releases details of DMS, the ODM will announce cancellation of all nondefense advance allotments of controlled materials for the third quarter.

Features—Salient features of the forthcoming DMS include tonnage set-asides of steel, copper and aluminum for defense and atomic energy needs and "spot directives" to mills to fill defense and atomic energy orders. As in the past, spot directives will be used sparingly when a production bottleneck has to be broken. Mills will have authority to sell to civilian buyers any excess tonnage not taken up by defense and AEC contractors, but only after lead time has expired.

Under DMS, supplies of steel, copper and aluminum will be decontrolled for all uses except programs identified by the symbols A, B, C, E and B5, electrical power projects that will supply atomic energy installations, and some civilian aircraft necessary to assure adequate emergency transportation. Other defense support programs possibly may be added later if needed.

Elastic—The term "defense" as it pertains to programs is elastic. Included are any components important to military and AEC requirements.

The set-aside plan for copper and aluminum is something new; it probably will follow the steel set-aside pattern. A decision still is to be made about allocating copper raw materials after June 30; such allocation is probable because of the high percentage of copper used for military and AEC purposes, and because of the need for balanced distribution of copper to the wire and brass mills and foundries.

Stainless Excepted—DMS will embody one exception to the general abandonment of allocations for nondefense purposes: Full

allocation will be continued for nickel-bearing stainless steels because of the large number of components made of this material and required for defense and AEC.

Adoption of the new DMS will leave under controls for defense and AEC needs about 12 per cent of the country's total steel tonnage, 20 per cent of all copper and almost 30 per cent of aluminum.

Turning Point—Until a month ago (Feb. 13), all steel, copper and aluminum were under distribution controls. On that date, the CMP was open-ended; this permits any steel, copper and aluminum produced in excess of tonnage needed to fill orders under CMP allotments to be sold to anyone.

On June 30, the present Defense Production Act under which the CMP is set up will expire. If controls are still needed, they must be re-enacted by Congress. The Eisenhower administration is embarked on a program of "get rid of as many controls as possible." Consequently, controls are being tailored down to only those needed to assure an unbroken flow of materials to direct defense uses and the atomic energy program. The abbreviated controls will be embodied in the forthcoming DMS, or "little CMP." In effect, the present CMP is being open-ended for all civilian uses of steel, copper and aluminum.

Amnesty for Violators

Violators of controlled materials orders and regulations are being given the benefit of recent relaxations of those orders. Those firms against whom suspension orders were issued now may acquire, use or dispose of any controlled materials obtainable under Direction 20 to CMP Regulation 1 and Direction 10 to CMP Regulation 6. Otherwise the suspension orders continue in force.

NPA officials say there will be no letdown in the efforts to spot violations and to issue suspension orders against violators as long as the Defense Production Act continues alive. However, the compliance drive is bound to lose impetus shortly; the number of hearing commissioners is to be cut from 28 to 20 as of Apr. 1, and from 20 to 5 as of May 1.

FRANK PURNELL
. . . retires after 51 years service

YS&T Chairman Retires Apr. 28

Frank Purnell, 66, chairman of the board of Youngstown Sheet & Tube Co., Youngstown, will retire from that position on Apr. 28, ending a 51-year active period of service in the steel industry.

Mr. Purnell began at Youngstown Sheet & Tube in 1902 as a callboy and worked his way up through the order, accounting and sales departments before joining the War Production Board's Steel Division during World War I. After serving as vice president of some steel export firms, he rejoined Youngstown Sheet & Tube in 1923 and became vice president. In 1930 he was elected president, and in 1950, he became chairman of the board, turning over the president's duties to J. L. Mauthe.

He will continue as a director and member of the executive board.

Bright Future for Instruments

Industry is moving quickly toward the day when 15 per cent of its outlay for machinery and equipment will be spent on instruments for measurement and control, says Henry F. Dever, president, Brown Instruments Division, Minneapolis-Honeywell Regulator Co.

Some industries may eventually consider instrumentation a self-liquidating project. The cost of such controls, Mr. Dever pointed out, could be offset by the resultant drop in inventories and stocks of goods in process, lower upkeep costs and less scrap loss.

Investment in the Future

Industry must spend $200 billion by 1960 to maintain standard of living

AMERICAN INDUSTRY will have to invest about $200 billion in new plant and equipment by 1960 if it is to achieve adequate output to maintain our high standard of living, says Dean E. Carson, director of business research for the B. F. Goodrich Co., Akron. That is roughly equivalent to the sum invested in the last 30 years.

Mr. Carson says that by 1960 the total U. S. population will be about 174 million persons, or 20 per cent more than 1950. Most of the increase will be in the consuming group rather than the producing group as the nation grows older. Therefore productivity will have to be based on a work force comparable with that of today. All those able and willing to work should be able to fit into this future picture in a productive capacity.

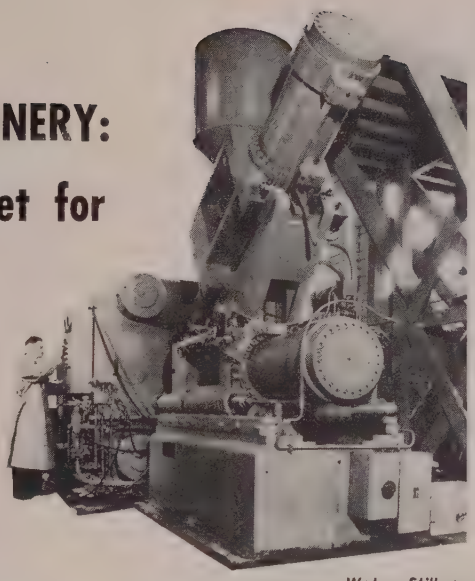
Efficiency, Plus—Not only will the labor force have to turn out to the best of its ability, but also employers will have to supply employees with more effective tools. In the boom days of the 1920s it cost industry about $71 billion to do that. In the more recent 1940s, $110 billion was spent to bring American productivity to unheard-of levels. In the future 1950s it will cost $200 billion simply to maintain that level.

Mr. Carson describes as "one of the most encouraging signs for business in general" the new administration's policy of relaxing controls over most materials. He said the resultant increase in quality at decreasing cost to the consumer will broaden markets, increase employment opportunities and bring a steadily rising standard of living.

Plan for the Future—He also encouraged long range studies of the future as vital to the planning of every well-managed business. They help to co-ordinate expansion of capacities to keep even pace with increased demand. He says that at B. F. Goodrich, long-range looks ahead have been a positive influence in shaping policies and in forecasting future needs.

PLASTICS MACHINERY: Permanent Market for Press Makers

15 million sales will ouble in 1953 even ith freer metals supply



Watson-Stillman

EVEN MANUFACTURERS of lastic-forming machinery are surrised at the continued high sales f their products with the easing of etals shortages. It proves, they ay, that plastics and plastic-formg machinery are here to stay as n independent business, not as an xpedient for emergency use only.

Last year's sales of plastic formg presses, major item involved n plastics production, hit the $15 illion mark and a new high for ost firms in the field (see table). ales will double this year.

Hot Pills—When all the auxiliary quipment, like pill machines which rop plastic balls into the presses nd heating furnaces, is considered, ales of plastic machinery scores round $100 million, guesstimates . A. Irwin, general sales manager, . W. Bliss Co., Canton, O. The lastics industry, including makers f resin powder, now consumes bout 115,000 tons of steel a year ith increasing use of alloy steel, tainless, nickel clad and other pecialties.

About 35 companies make the our main types of plastic-forming achinery: Injection, compression nd extrusion presses and vacuum orming machinery. Injection presss account for the bulk of plastic onnage produced since they're aster, with a 15 to 20 second ressing cycle, and more flexible, sing thermoplastic material which an be reground, heated and used ver again. Sizes on these presses ange from the small 2 to 3 ounce presses, where the greatest quantity of sales is made, to medium-sized 8 to 12 ounce machines which account for the greatest dollar volume of trade and on up to the Watson-Stillman Co.'s 300 ounce press pictured above. The ounce calibration of injection presses refers to the maximum weight of a single "shot" of plastic for one impression which can be accommodated by a press.

Trend Toward Weight — Press makers are especially jubilant about prospects for the coming year because the main trend in the industry toward heavier and faster presses hasn't yet been fully exploited. Traditional customers of plastics and plastic-forming machinery include the appliance makers, first, and the automotive trade, toys, novelties, communications manufacturers, such as telephone and radio equipment builders, household articles and plastic wall tile producers. But, the heavier presses are opening up other fields. One pressmaker estimates the output of large diameter plastic pipe increased 400 to 500 per cent in 1952. Another press manufacturer is working on a newly designed press with 2500-ton clamping capacity—enough to mold complete refrigerator panels in one shot. All machinery makers are watching closely the experimental work in molded fiber glass auto bodies.

One thing holding back these developments in larger plastic parts is the lack of design engineers. Then, too, manufacturers are busy trying to catch up with orders for the smaller machines, several companies report they're sold out for the year already. Other companies, like Van Dorn Iron Works, Cleveland, say backlogs have doubled since a year ago. Finally, those pressmakers with government contracts are limited as to how much of their capacity they can devote to nonrated civilian work.

Not a Substitute—Plastic-forming machinery makers admit that completely free metals supply will dampen their business somewhat. But, they add, plastic equipment sales will never dry up again as they did right after World War II. "The plastic items being manufactured today are being made because they *are* plastic, not because they are substituting for steel," says John Parkes, vice president-sales, Hydraulic Press Mfg. Co., in Pittsburgh.

"HPM is one of the biggest metalworking press manufacturers. Metalworking is our big business. Yet, we were suprised in 1952 that approximately 15 per cent of our business went into plastic molding equipment. Five years ago, we were running 2 to 3 per cent. Now, we expect 1953 to be an even bigger year than last year."

DOLLAR SALES OF PLASTIC FORMING PRESSES

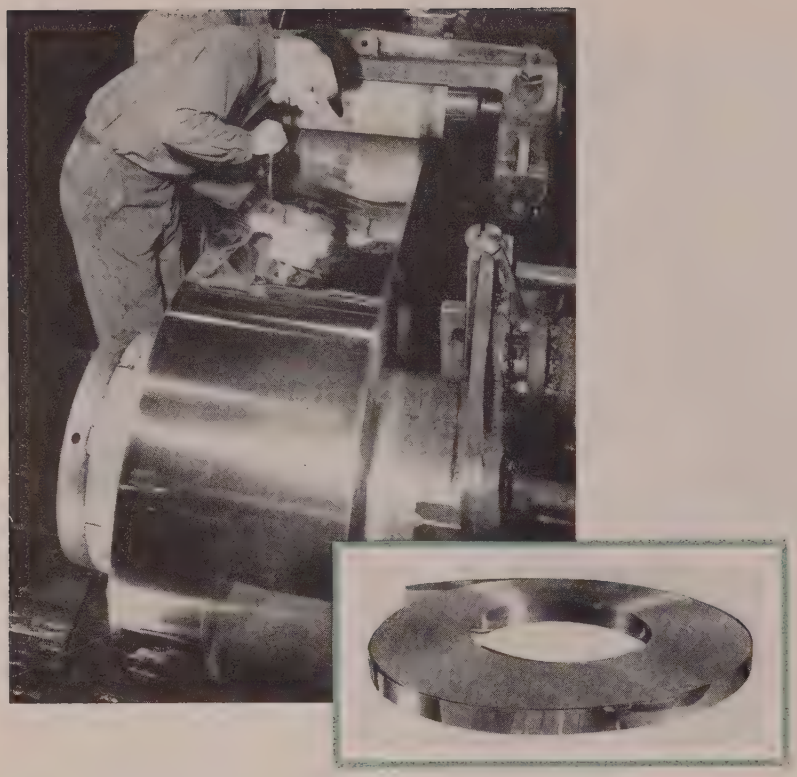
1951	1952	1953
$10.5 Million	$15 Million	$30 Million

Announces New Detroit Plant

Bliss & Laughlin Inc., Harvey, Ill., reports the early opening of a new plant in metropolitan Detroit. This facility joins present Bliss & Laughlin factories at Harvey, Buffalo and Mansfield, Mass.

Company President Carl L. Huff states that plant construction is nearly complete and that equipment should be installed in time to permit the starting of production in early April. The plant will produce cold-finished steel bars in both carbon and alloy steels.

During 1952, Bliss & Laughlin invested $764,000 in additions and betterments to property.



Mills Strain to Supply More Gleam for Autos as—

Chrome Stainless Brightens

STRAIGHT CHROME stainless is becoming more and more important to metal products makers.

Specific material in the spotlight is type 430 strip. It comes nearest to meeting the all around requirements for general use. Actually it was used before the chrome-nickel stainless steels and has a top-notch record of successful applications.

Beauty on the Highway—For first hand evidence take a look at almost any new car. It is loaded with gleaming bright work from top to bottom. Type 430 strip is now found on grilles, body and window moldings, hubcaps, windshield wipers, shields, and around headlights and tail lights.

With nickel restricted on all but functional brightwork, chrome stainless is used in place of plated steel. As much as 35 pounds may be used on a deluxe model. One of the Big Three is using 34 per cent more than was used in 1952.

It All Adds Up — Now take a look at auto production. Figures for 1953 show that about 50 per cent more units have rolled off the assembly line than for the same period in 1952. Increased auto production plus increased bright work are tightening up the supply of chrome stainless strip.

Mills are booked to capacity; some are sold out until midsummer. Some estimate the market for the rust-resistant chrome strip to be twice as strong as a year ago. Several producers have expansion programs under way or planned.

Permanent Gain—Producers believe a large part of the strong demand is here to stay. Readily available nickel would undoubtedly cut requirements in some quarters. But there's still plenty of optimism on the straight chrome side.

The more realistic mill men feel that it will be a long time before nickel emerges from the precious status. The high temperature jet program may tighten supplies.

Here's What They Want—Type 430 contains 14-18 per cent chromium. Auto manufacturers like at least 16-17 per cent chromium for corrosion resistance.

Rust resistance of decorative 430 is due to its chromium content since it accounts for the formation of a thin protective oxide film on the surface. When buffed, 430 looks like chrome plate. A flash of chromium plate can be applied to preserve a high finish, but this is the exception rather than the general rule.

Brightness and durability of chrome stainless, as well as economy with which it can be handled, are factors that make it appeal to more and more car builders.

Plenty of Others, Too—Consumers of the bright chrome strip are not just the auto manufacturers. More and more is finding its way into building construction, railroad equipment, household appliances, kitchen accessories and in refrigeration and air conditioning equipment.

A large refrigerator producer is resistance welding its evaporator unit using 430-Ti in place of previously used 18-8 type. Regular 430 was unsatisfactory here because of poor welding properties.

The new titanium-modified 430 was developed for use where the welding characteristics of regular 430 limit its usefulness. It has superior bending qualities, is a better welding steel, and has superior corrosion resistance to that of regular 430. However, it will not take as high a surface luster as unmodified 430.

Timken Roller Bearing Expands

Timken Roller Bearing Co., Canton, O., will launch a multimillion-dollar expansion of its Bucyrus, O., plant, to be completed by the end of 1954. Wigton-Abbot Corp., Plainfield, N. J., is in charge of plans and construction of the project.

Included are three new buildings, which will cost about $1.3 million, and new machinery and production equipment for the manufacture of bearing parts, which will cost about $2 million.

One of the most important phases of the program will be a new boiler plant which will produce up to 80,000 pounds of steam

per hour. Its two boilers will be provided with three alternate methods of firing—coal, oil and gas. A new storeroom will house the maintenance, repair, electrical, sheet metal departments and all stores. An adjacent building will accommodate the plant management, accounting, personnel and medical departments. A locker room and cafeteria building also will be built.

Four Ways To Reduce Costs

Four ways to keep down production costs and prices—industrial research and development, standardization of equipment, inventory control and the work of purchasing agents—were cited by J. K. Hodnette, vice president of Westinghouse Electric Corp., Pittsburgh, in a speech before the Public Utility Buyers' Group of the National Association of Purchasing Agents in New Orleans.

Mr. Hodnette told the group that during 1952 Westinghouse spent much more money on research and development than it earned in net profit. It brought direct results in prices, however, he said.

He also said that purchasing people "worked with engineers and manufacturing personnel in producing about 18 per cent of the cost reduction we achieved in 1952 through changes in design, material and manufacturing processes."

It's Safer in the Plant

It's safer for employees of E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., to be on the job than off, statistics show. In January, 1953, 144 employees out of the total Du Pont work force of 76,000 were injured while away from their jobs. In the whole year of 1952, only 86 were hurt on the job.

Last year set an on-the-job safety record for Du Pont plants. On the basis of time-losing injuries per million manhours of exposure, the rate was 0.44 as compared with the 1951 record of 0.60. The off-job rate for January was 6.01. The all-industry on-the-job rate is 9.06.

Of Du Pont's 117 laboratories, plants and construction projects, 72 completed the year without a single time-losing injury.

"Steel at Any Price"

Such is the buying attitude of the auto industry. This year it may pay $215 million in premiums, or an average of $36 a car, to get steel

AUTOMAKERS will spend close to $215 million this year in price premiums to get steel if present auto production levels and the current availability of steel remain unchanged for the rest of 1953.

That figure is based on a STEEL poll of automotive steel buying patterns during the first two months of 1953 and prorated for the year. Assuming the auto industry will attain its production goal of 6 million cars this year, the added cost per car would average $36.

Trapped—The market, auto firms think, won't stand that kind of a boost, so the manufacturer will have to absorb the cost of premium-priced steel or sacrifice production.

The $36 figure is only an average. Some automakers will pay more per unit—others less—to keep production rolling. It depends on the amount of premium-priced steel each must buy. Bulk of the premium payments will be for warehouse steel and conversion steel.

Stopgap—Most automakers are buying some steel from warehouses. Estimates range up to 15 per cent of total tonnage used. In most cases warehouse steel is being used to plug up lesser production gaps that threaten to shut down assembly lines. Simple economics is involved: It's cheaper to pay the warehouse prices than the cost of closing down.

Conversion steel, however, is another story. Nearly all automakers use some. That's the steel that's produced in rough form at one mill and finished at other mills where surplus finishing capacity is available. The majority of the automakers report conversion steel comprises 20 per cent of their steel consumption. One firm says its conversion steel consumption is as much as 38 per cent of all steel purchased.

The automobile industry is the biggest user of conversion steel, and the bulk of conversion steel becomes cold-rolled carbon steel sheets.

The Extra Boost — Conversion steel is definitely more than a stopgap in production. It's the extra boost supporting record auto production.

Demonstrating the strength of demand for cold-rolled steel in Detroit these days is this comment of one auto steel buyer: "If I could get 10,000 tons of cold-rolled sheets for immediate delivery I'd order them right now."

Squeezed—Steel demand is intensifying in Detroit with the production push of the automobile industry. During the last two weeks, automakers declare, steel has been tighter than at any time in the last three years. There are no indications that the situation will be better in the near future; many fear that it may grow worse.

When you're working hand-to-mouth as the automakers are today, any slip of the wrist spells production stoppage.

DEFENSE SPENDING: How far we can go; How far we have gone

(In millions of dollars)

* Fiscal year 1953. Represents the limit to which Congress authorizes Defense department to negotiate deferred-payment contracts.
† First seven months of fiscal 1953. Represents the amount of deferred-payment contracts actually negotiated by Defense department.

Defense Department Obligates $19.9 Billion

DURING the first seven months of fiscal 1953, the Defense department obligated for procurement and construction $19.9 billion, or about 68 per cent of the $29.2 billion of obligational authority provided by Congress for the entire fiscal year.

In addition, the Defense department is expected to use another $4 billion during the year for purchase of hard goods for the military assistance program. Already $2.9 billion of that is obligated. Add to the available funds another $7 billion obligational authority left over from fiscal 1952 and the total for procurement and construction is $40.2 billion.

Construction Lags—As seen in the table above, hard goods—aircraft, ships, tanks, weapons, ammunition, production equipment, electronics and other equipment—account for the lion's share of procurement. About 70 per cent of the obligational authority is used up. Only 64 per cent is already accounted for in the soft goods classification — clothing, subsistence and petroleum—and construction lags even farther behind at 53 per cent. That is probably because the peak of the expansion program is past.

During the 31-month period following the start of Korean hostilities, Congress has made available to the Defense department total obligational authority of $169.6 billion. About $118.5 billion of that was tagged for procurement and construction. Department of Defense obligated $143.5 billion of the total in the same period, with $100.4 billion going for procurement and construction.

The Air Force accounts for $40.2 billion of the latter figure, followed by the Army at $35.1 billion and the Navy at $25.1 billion.

DMPA Buys Mexican Manganese

Defense Materials Procurement Agency signed four contracts calling for delivery to the United States of 230,500 tons of manganese ore from 30 to 40 small Mexican mines. A previous contract called for delivery of 50,000 tons.

A three-year Mexican project aims at producing 550,000 tons of manganese ore from fields as far as 1000 miles below the U. S. border. Contracts for the remaining 269,500 tons are under negotiation. The ore will be delivered to El Paso, Tex., where DMPA plans to negotiate with a private concern for construction and operation of a processing plant. Ore containing less than 20 per cent manganese or more than 20 per cent silica will be refused.

Contracts are with: Winter, Wolff & Co., New York; Frank Samuel & Co., Philadelphia; Continental Ore Co., New York, and Industrial Development Corp. de Mexico, S. A., San Luis Potosi, Mexico. The previous contract is with Manganese Producers, El Paso.

Electricity Produced from Atom

Useful amounts of electric energy have been obtained from nuclear energy released from a new type of liquid reactor developed by the Union Carbide & Carbon Corp., which operates the Atomic Energy Commission's Oakridge National Laboratory.

Company scientists brought a pilot model of the reactor system to its fully-designed power—1000 kilowatts of heat output.

The reactor is a homogeneous solution which serves as fuel, moderator and coolant. Heat generated by the reaction of uranium fuel is removed by pumping through a heat exchanger or boiler, which, in turn, provides steam to drive a turbine generator.

ODM Trims Expansion Goals

Expansion goals for metal cans, .30 and .50 caliber ammunition metal boxes and commercial aircraft were revised by the Office of Defense Mobilization. Un-

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Milling Machines	White Star Machinery & Supply Co. Inc., Wichita, Kans.
Trucks, Fork-Lift	Wright-Hibbard Industrial Electric Truck Co. Inc., Phelps, N. Y.
Trailers, Stockroom	Stewart Steel Products Inc., Brooklyn, N. Y.
Motor Vehicle Parts	Yankee Metal Products, Norwalk, Conn.
	Loner Wood Tool & Engineering Corp., Detroit
Shells, 90 mm	Murray Co. of Texas Inc., Dallas
Shells, 81 mm	Nesco Inc., Milwaukee
Shells, 75 mm	W. C. Norris, Manufacturer Inc., Tulsa, Okla.
Gun Sights	Gilbert & Barker Mfg. Co., W. Springfield, Mass.
Tanks, T-48	Chrysler Corp., Detroit
Aircraft Parts	United Aircraft Corp., E. Hartford, Conn.
Indicators	General Electric Co., Schenectady, N. Y.
Propeller Shafts	Oakland Machine Works, Oakland, Calif.
Electron Tubes	Sylvania Electric Products Inc., Dept. T, New York
Switch Knives	Powercraft Corp., St. Louis
Magnetic Amplifiers	Magnetics Inc., Butler, Pa.

anged is the goal of 4.8 million
ns of metal can production, but
e amount of actual expansion
w needed to attain that goal by
n. 1, 1956, is only 700,000 tons.
iginally it was 800,000, the re-
action coming from new data in-
cating the industry's capacity
as underestimated.

The ammunition metal boxes
al was changed from a unit basis
a dollar basis and set at $10 mil-
on capital investment for new
cilities as the goal to be reached
Jan. 1, 1955.

Terminal dates for delivery of
0 commercial aircraft have been
ifted to Jan. 1, 1950—June 30,
55. Original dates were Apr. 1,
51 to Dec. 31, 1954. About half
the airplanes have been deliv-
ed.

Constellations Coming for the Navy

Super Constellation transports roll through Lockheed Aircraft Corp., Burbank, Calif., as the company rushes to complete a record $400 million backlog for the new type powered by compound engines. These planes are part of a large U. S. Navy order, seat 106, and convert to carry cargo or hospital patients

SA Regulation Revised

Contractors still holding records
World War II government con-
acts and who would like to get
d of them may be able to do so
nder a new revision of General
ervices Administration's Office of
ontract Settlement Regulation
o. 11.

The amendment, which was pub-
shed in the *Federal Register* of
ar. 7, reduces the holding period
om five to three years for rec-
ords on contracts which were still in the process of settlement on Dec. 31, 1950. It also sets up a guide to help businessmen distinguish between essential and non-essential papers on war contracts when housecleaning their files.

ebruary Steel Output Sets Record for the Month

RODUCTION of steel for ingots
nd castings in February totaled
,938,000 net tons, higher than ever
efore recorded in February.

In setting the record, the indus-
ry operated at 99.1 per cent of
apacity, the same rate as in the
ecord-breaking month of January.
otal output in January exceeded
hat of February because the form-
r month is longer.

Pace Setting Start—The record high of February, when added to the 9,896,627 net tons produced in January, gives a total output for the first two months of this year of 18,834,627 net tons. That is also a new high for the period, says the American Iron & Steel Institute.

Such record-setting activity by the steel mills is one indicator that metalworking output as a whole is brisk. Other indicators point the same way (see p. 85).

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (net tons)	No. of weeks in mos.
	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
1953										
January	8,841,679	101.4	350,200	88.9	704,748	81.1	9,896,627	99.1	2,234,002	4.43
February	7,848,000	100.9	329,000	92.5	661,000	84.2	8,938,000	99.1	2,234,000	4.00
1952										
February	7,703,066	102.4	382,712	89.8	571,432	87.6	8,657,210	100.7	2,091,114	4.14

Note—The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953 as follows: Open-hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,490 net tons, total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,-830 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

† Preliminary figures, subject to revision.

CHECKLIST ON CONTROLS

Materials Orders

CRYOLITE—Amendment of Mar. 10, 1953, of NPA Order M-99 states that exports of cryolite to countries other than Canada may be made hereafter by persons licensed by the Office of International Trade to purchase and export the material without further authorization from the National Production Authority. However, the quantities of cryolite to be exported must be within the established export quotas. It was effective Mar. 10.

OIL, GAS OPERATORS—Direction 8 to NPA Order M-46, issued and effective Mar. 10, 1953, provides for the automatic revalidation of certain allotments to oil and gas operators and permits placement of authorized controlled materials orders for other than oil well casing, oil well tubing or drill pipe in the calendar quarter next succeeding the quarter for which the allotment is made.

Price Regulations

CONSUMER GOODS—Amendment 17 of Revision 1 of General Overriding Regulation 5, issued and effective Mar. 5, 1953, removes from price controls ranges, refrigerators, home and farm freezers, dishwashers, clothes washers, clothes driers and clothes ironers.

AUTOMOBILES—Amendment 43 of General Overriding Regulation 9, issued and effective Mar. 5, 1953, removes from price controls automobiles, trucks, parts and accessories, aircraft parts, marine equipment and supplies, boats, ships and marine vessels.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Senate resolution would assist defense contractors to regain losses suffered from higher prices and materials shortages resulting from the Korean war

IF CONGRESS enacts S. Res. 1175, introduced by Sen. Edward J. Thye (Rep., Minn.) and ten other members of the Senate Small Business Committee, defense contractors who suffered from the upward surge of prices after the Korean war began or from ensuing materials shortages will be able to recoup such losses from the government.

The bill is in the Senate Government Operations Committee which is conducting a study to decide where relief may be granted. Under the bill, contractors would submit claims to Army, Navy or Air Force Contract Adjustment Boards, and they would then be processed by the legal staffs.

Existing legislation authorizes the Defense department to reimburse contractors for losses when such reimbursement "will facilitate the national defense." Under that language, says Senator Thye, many deserving contractors fail to qualify, so that a more liberal law is needed.

First move of the committee is to get the armed services' thinking in regard to the bill. Interested contractors sould be able to tell their stories to the committee in open hearings to be scheduled by Congress in April.

List Security Laws . . .

Industrial Security Letters Nos. 1 and 2, 1953 series, are "must" documents for defense contractors and subcontractors.

Letter No. 1 recapitulates security rules pertaining to employment of aliens within defense plants, information releases by manufacturers, releasable and nonreleasable information, filing of the security forms DD 374 and 395, screening the hiring line to bar subversives, training employees to safeguard information relative to security, etc.

Letter No. 2 contains those portions of the Federal Espionage and Sabotage Acts, Title 18, which should be understood by all persons requiring access to classified security information or engaged in any manner in the performance of defense contracts.

Copies of the letters may be obtained from the Office of Industrial Security, Munitions Board, Washington 25, or from contracting officers.

Object to Postal Increase . . .

Protests by many manufacturers and other businessmen against a proposal to increase parcel post rates by as much as 35 per cent have led to the introduction of bills to remove the Interstate Commerce Commission's rate-making authority in this field and return it to Congress.

The bills are S. Res. 586, by Senators Frank Carlson (Rep., Kans.) and Olin D. Johnston (Dem., S. C.), and H. Res. 3599 by Rep. Paul W. Shafer (Rep., Mich.). Authors of the bills think they will get a better rate deal from Congress than from the ICC.

Slipshod Bidding? . . .

Numerous instances of careless bidding on military contracts by small firms are reported by the House Small Business Committee. In several cases, low bidders deemed responsible by the contracting agency failed to give proper study to the item specifications and contract terms and conditions. This has not only brought trouble to the armed services, but financial hardship to the firms involved in the bidding.

The effect is to discourage taking chances on small firms. The committee advises small companies to bid carefully—particularly when they bid on products they do not customarily make and are therefore not in a position to estimate expenses exactly.

BUDGET CUTTERS
. . . advance on high costs

To Cut Budget's Billions . . .

To enhance chances of success in its "Operation Economy," designed to cut $10 billion out of the Truman budget, the House Appropriations Committee has created the largest fact-finding staff in its history. The line-up contains 75 specialists drawn from business, the professions and the government itself.

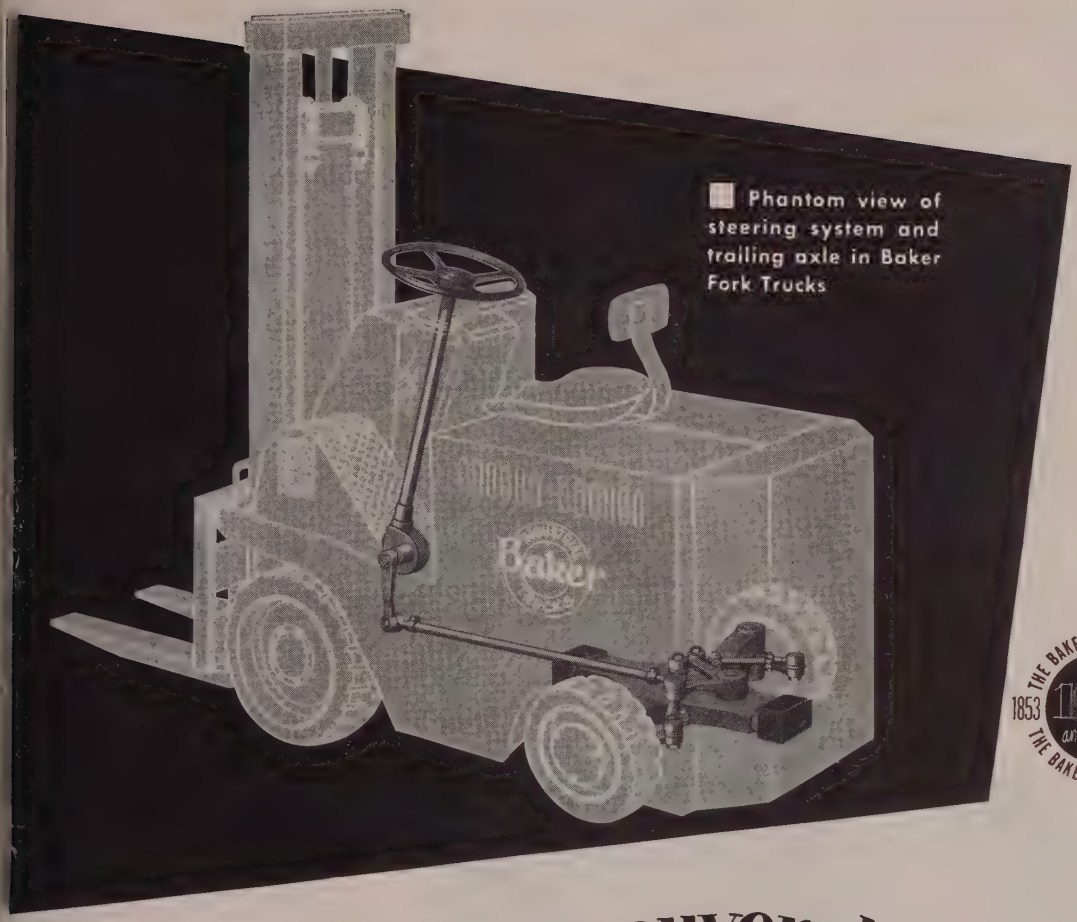
They are, in the words of Rep. Norris Cotton (Rep., N. H.), "to descend on the departments and the bureaus, penetrate their defenses, ferret out their extravagances, attack their duplications and deadwood and be the reconnaissance force of our committee in the Battle of the Budget."

Best thing about this approach is that it has the full support of both parties on the committee.

Raise Castings Goal . . .

A new expansion goal for an annual increase of 160,000 tons capacity for gray iron castings weighing over 3000 pounds was announced by the Office of Defense Mobilization. This program, to be completed by July 1, 1954, is in addition to the estimated capacity in 1952 of 16 million tons for the gray iron castings industry as a whole.

The capacity increase may be made up either of new facilities or of additions to present plants.



Phantom view of steering system and trailing axle in Baker Fork Trucks

THE BAKER-RAULANG CO. 1853 100th anniversary 1953 THE BAKER-RAULANG CO.

The most maneuverable fork truck

Maneuverability ranks high among features essential to efficient fork truck performance. Finger-tip control of steering, ability to make sharper turns and operate in narrower aisles, complete accommodation to uneven roadways, effective snubbing of road shocks — these are some of the qualities engineered into Baker fork trucks which make them the most maneuverable in their class — and less fatiguing to the operator.

Automotive type steering assembly with ball-type joints and anti-friction bearings in the steering linkage give you a truck as easy to handle as your automobile. Proper steering geometry minimizes "scrubbing" of tires. The wide-angle steering axle is mounted longitudinally in jumbo-size rubber blocks. This absorbs road shocks and provides constant, smooth traction and travel despite the most adverse floor conditions.

Write for *your copy of the "Baker Handling Library" a new portfolio of actual case histories.*

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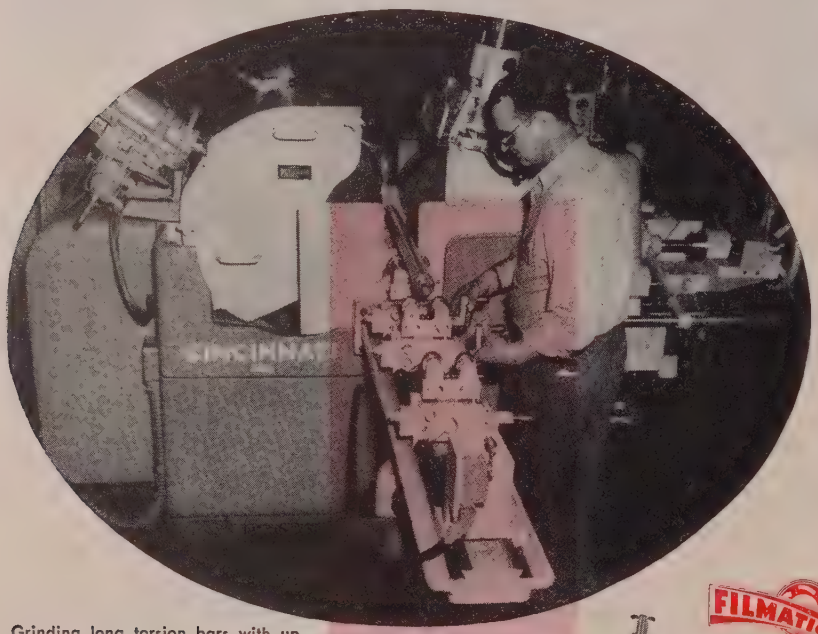
The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Material Handling and Construction Equipment

Baker®
industrial trucks

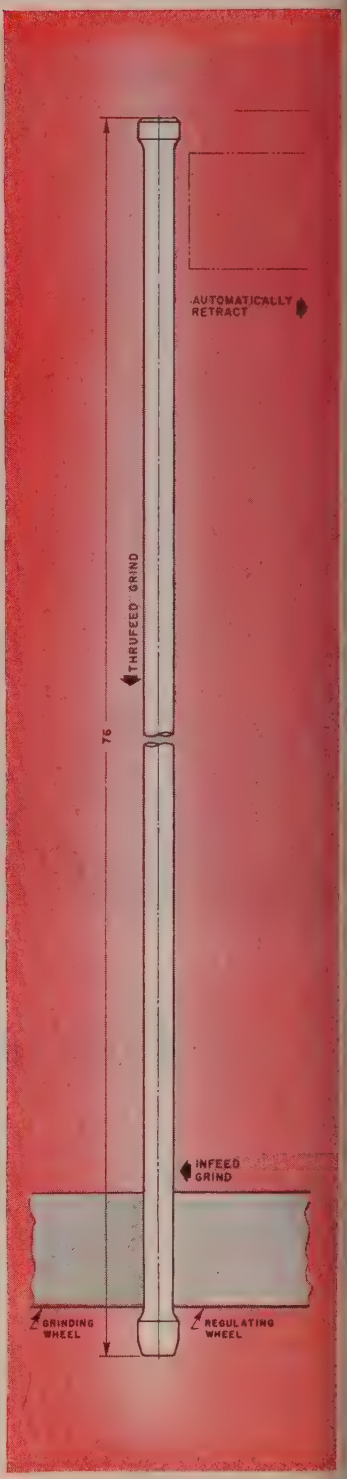
UPSETTING A CENTERLESS TRADITION ... and saving time!

"Thrufeed grinding is applicable to straight cylindrical work." So goes the handbook description of centerless grinding. The equipment illustrated here upsets this restriction on the centerless method; it thrufeed grinds the center section of torsion bars having upset ends. ¶ Cincinnati Application Engineers tooled up a CINCINNATI FILMATIC No. 2 Centerless Grinder with a modified long bar attachment and power advance and retraction of the regulating wheel slides. Movement of the slides is 1", pneumatically controlled. A short length next to one shoulder is infeed ground to size, the long center section is thrufeed ground to the opposite shoulder, and then the regulating wheel slides automatically retract. An end stop prevents traverse motion of the work while infeed grinding, and retractable roller brackets support the work while thrufeed grinding. ¶ Score another first in low-cost precision grinding by Cincinnati Engineers. Perhaps we can help you reduce costs with new equipment and new methods. It's a good idea to see what can be done today. When writing, include blueprint of work.

CINCINNATI GRINDERS INCORPORATED • CINCINNATI 9, OHIO



Grinding long torsion bars with upset ends by the thrufeed method on a CINCINNATI FILMATIC No. 2 Centerless Grinder.



Infeed and thrufeed methods are combined on this CINCINNATI FILMATIC No. 2 Centerless Grinding Machine. More information about this equipment will be found in Vol. 8 No. 4 of our "Report" magazine. Complete specifications for the standard No. 2 Centerless may be obtained by writing for catalog No. G-611. Brief data in Sweet's.

CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES
CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES

Steel Price Changes Imminent in Europe

British steelmakers are forced to ask for a price raise to cover the 5 per cent hike in coal. Schuman plan countries hope for lower steel prices after Apr. 10

WHILE MEMBERS of the Montanunion (Schuman plan) countries await new steel price schedules which will appear Apr. 10, British manufacturers are bracing themselves for another domestic steel price increase. Those price trends only exaggerate Britain's problem of finding new and expanded export markets.

The Iron & Steel Corp. of Great Britain has asked the minister of supply to authorize an immediate increase to cover the recent hike in coal prices. When iron and steel prices were adjusted a year ago, a large part of the increased costs of manufacture were not passed on to consumers. Since then, costs have continued to rise, plus a 5 per cent rail freight increase and small advances in scrap prices authorized in the United Kingdom.

One Too Many—The last blow, a 5 per cent addition to the pithead price of coal, cannot be absorbed by the steel industry. The coal hike will result in a 1 to 1½ per cent increase in the average cost of producing steel, says the Iron & Steel Corp.

At the same time, Schuman plan countries look with varying degrees of hope for renewed ordering when the Montanunion steel pool goes into effect in early April. German producers have held prices up despite a soft market, awaiting the effects of a uniform market. Belgian producers look for little change in their export prices, since they have made several price cuts already within the last six months. Domestic prices, in fact, are expected to rise in the common market because Belgian prices are lower than the home market prices of all the other participating countries.

Slow Change — The transition from the traditional European system of duties, quotas, discriminatory freight rates and cartel agreements will not be immediate. There will be gradual change over a period of five years. But some changes will come right away and it takes only a small price advantage to alter the flow of steel from European mills.

Supply Overtakes Demand

Belgian steel shipments are exceeding new orders for the first time since May-June, 1950. New orders from the U.S., expected after the last round of price reductions, have not materialized in quantity and the Belgians are waiting expectantly for Apr. 10, when prices resulting from the application of the Schuman plan will be known.

International Fairs Approach

Spring fair time is again approaching. Two big ones are the British Industries Fair in London and Birmingham, England, set for Apr. 27 to May 8, and the Canadian International Trade Fair in Toronto set for June 1 to June 12.

More than 2000 exhibitors are expected for this year's BIF. Interested American businessmen can get free advance copies of the fair catalog on request to any British consulate.

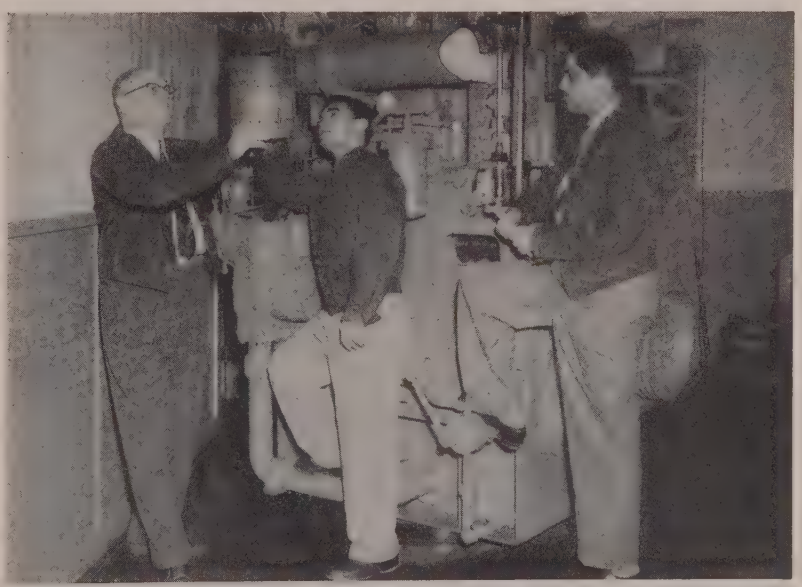
Foreign Research Beckons

"There are excellent research opportunities abroad for American industry," says Dr. J. E. Hobson, director of Stanford Research Institute, Palo Alto, Calif.

American industry can procure research talent and facilities in Europe for a third to one-half of what they cost in this country, Dr. Hobson added in announcing a month's tour of European technical and research centers by a party of research executives organized by SRI. "Scientific manpower here is not keeping up with research demands. We believe that many companies might benefit in the long run if a closer relationship could be established between European research capacities and American research needs."

ACOSA Expands Mill Output

The Aluminum Co. of South Africa Ltd., Pietermaritzburg, Natal, has increased its rolling mill output to include flat or coiled sheet and circular discs. The plant is now valued at more than $2.8 million.



Railroaders Learn the Inside Story

Pakistan Railway engineers, Mohammed Y. Warris, right, and Mohammed S. Ansari, center, get first hand training on a full scale cutaway of a 6-cylinder supercharged Cooper-Bessemer diesel locomotive engine from F. M. Devin, manager, Railway Engine Division, Cooper-Bessemer Corp. Ten of the engines are being furnished to power General Electric locomotives for the Pakistan railways

Engineering Manpower Commission, Engineers Joint Council

NEEDED—

30,000 Engineers a Year

ENGINEERING students' ears must be buzzing this year, judging by the number of nice things said about them. The young engineer may virtually select his company and starting salary as the engineer shortage steadily worsens.

Predictions are that the supply of trained men will become shorter for industry before it improves. Experts are now forecasting a critical shortage until 1956.

Help Wanted—Some 40,000 engineering jobs are vacant, spokesmen of the Engineering Manpower Commission of the Engineers' Joint Council say. Needing 30,000 new engineers annually, industry expects engineering graduates to number 23,000 in 1953, 19,000 in 1954, 22,000 in 1955 and 29,000 in 1956. A large percentage of these men are subject to the draft, but many engineers and students will soon be discharged from the armed services to balance those lost.

At Case Institute of Technology, Cleveland, officials report that about 240 students will receive Bachelor of Science degrees next June as compared with 300 in June, 1952. On the other hand, the number of freshmen entering last fall increased 30 per cent from the total one year earlier.

Faulty Reports—Explaining the drop in graduates, said to be "fairly typical of all schools this year," Case spokesmen remarked that faulty statistics were issued and circulated several years ago, causing high school students to believe that there was an oversupply of engineers in industry. The smaller number of babies born in the depression also affects college rolls.

Colleges, high schools and industry are working together to interest as many boys as possible in a career of engineering. Vocational advisers point out the advantages of training in mathematics and physics to high school students, while some companies offer scholarships to technical colleges. At the college level, companies send representatives to interview eligible men as early as five months before graduation.

Aids to Engineers—To assist in training engineers, Westinghouse Electric Corp. provides funds for 156 scholarships, 137 fellowships and four professorships. General Motors Corp.'s Institute sponsors high school graduates, giving them an education both at school and on the job. Other companies have similar programs.

Despite efforts to recruit engineers, this year's graduates will choose among five to ten job offers apiece. A survey by the National Industrial Conference Board indicates that Bachelor of Science holders will draw an average of $334 a month in industry. Graduates will command more if they have skills in particulary critical categories in mechanical, metallurgical, industrial and electrical engineering.

Poor Outlook—Gloomy prophecies come from large and small companies alike. Needing more engineers, these companies fear they won't be able to replace their normal turnover this year. Some small plants, requiring specialists, are in a worse situation, as they require men with shop experience. No end to the shortage is seen until today's freshman class graduates from technical school—in 1956.

Much constructive work is being done to soften the effects of the shortage. The Engineering Manpower Commission of the Engineers Joint Council is working to assist returning Army veterans to find engineering jobs. Companies are examining their engineering departments to insure that the engineers they have are fully utilized. Efficiency of staffs and individuals is being analyzed. Industry may solve its shortage in this way—by making optimum use of each engineer.

USS To Build New Research Lab

United States Steel Corp., Pittsburgh, is planning to construct an entirely new research center in a rural area of Allegheny county near Pittsburgh for developing new and better steels. It will consist of three buildings with a combined floor space of 132,000 square feet.

The center will enable U. S. Steel to co-ordinate the work being done in the corporation's other laboratories in the U. S.

nstallment Buying Boom

Public buying habits tend to switch from cash to credit, national study reveals

NSTALLMENT CREDIT for durble goods climbed from $20 billion i 1951 to $25.1 billion last year, ne National Industrial Conference oard reports. The rise in installent sale and loan credit continued rough December, 1952, when a) per cent increase was noted om December, 1951.

Marked Increase — The Conferce Board declares it is too early say what proportion of this redit boom" is temporary. A ronounced rise in credit sales mpared with total durable goods les volume beginning in summer onths of 1952 probably resulted om the lifting of Regulation W, overning installment buying, in ay, 1952.

The proportion of credit to cash les has dropped off since last mmer but still remains substanally above the pre-May, 1952, vel. Trends of credit sales in the ext few months will indicate what art of the increase in installment olume pointed to a lasting rise in ne rate of borrowing.

From Cash to Credit—Statistilly, the board's report fits into ne trend toward credit purchases hich has progressed through most ears since 1946. Credit sales are earing prewar relationships to otal sales for most consumer durble goods. The percentage of onsumer income being set aside or debt repayment is higher than rewar figures: 9.3 per cent in 952 compared with 9.1 per cent in 941.

Among major reasons for the rearn to credit buying has been the radual depletion (in purchasing ower) of liquid assets built up uring World War II by families ho normally buy on credit. In ddition automobile credit purhasing has greatly increased.

Extend Payment Period—oupled with growing importance f credit sales is the gradual engthening of collection periods. epartment store installment conracts signed in 1946 averaged nine onths; those in 1951 ran for 13 onths.

Foremen and executives getting out of touch . . .

Survey Shows Need for Closer Plant Liaison

BETTER COMMUNICATIONS between executives and their foremen is the first requirement to narrow the widening gap in their evaluation of supervisory needs, the Research Institute of America reports. A survey of the two groups last year showed agreement on the three main areas in which foremen need information. The same survey this year shows no such agreement.

In 1952, both executives and foremen considered human relations, operations and procedures and economics, in that order, as most important. They disagreed on some of the particulars, but not on principle. The most recent survey discloses that executives now regard operations and procedures as the most important problem, followed by human relations and economic matters.

Discord — Supervisory personnel still hold to their views on human relations, but now consider economic matters of more importance than operations and procedures. Research Institute attributes this shift to the election campaigns and international crises.

The fact that executives no longer see eye-to-eye with their foremen leads the institute to believe "higher management either is losing touch with front line needs or is more aware of what supervisors need than the supervisors themselves." In either case, closer contact between the two is needed.

More Discord—The survey shows that executives are more aware of the need for better communications this year than last—more aware than supervisors. The latter feel more pressure of the job than their bosses do, possibly because of difficulty in meeting their demands. In dealing with superiors, foremen reported a greater need for help than did the executives, which might contribute to the sense of pressure on the subordinates.

In 1952, foremen rated aggression and hostility higher than the executives did, but the new report shows a turnabout with the latter group significantly more concerned about this than the former.

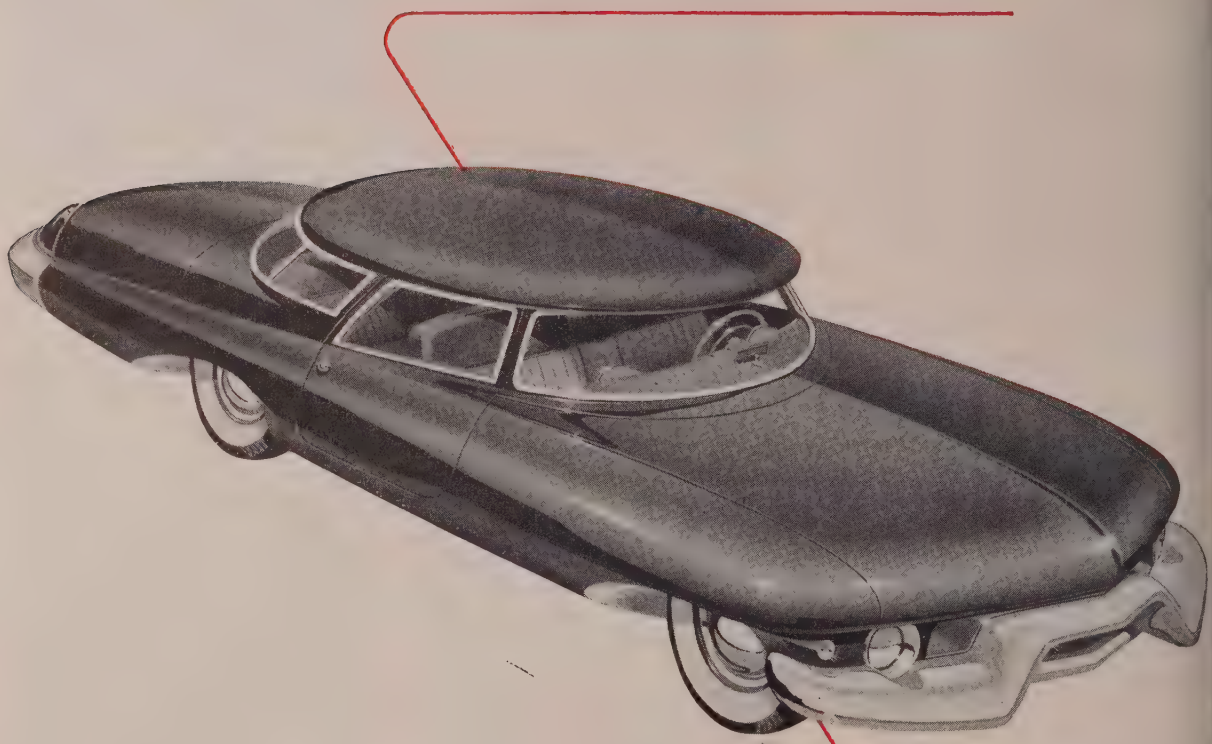
Some Agreement—Not all is disharmony, however. Both groups agree that front-line people need more guidance on how to tackle problems and that foremen must develop greater "sensitivity to trouble symptoms" among the groups they supervise.

The institute feels management's chief concern should be to understand and relieve underlying pressures which cause disagreements.

Specify N-A-X HIGH-TENSILE STEEL for **Lighter Weight**

Longer Life

with Economy

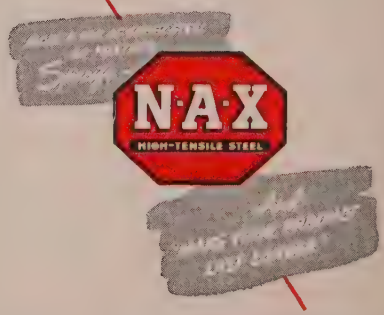


N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than can mild carbon steel.

Your product can be made lighter in weight . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

KEEP YOUR SCRAP MOVING TO YOUR DEALER



GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division • Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

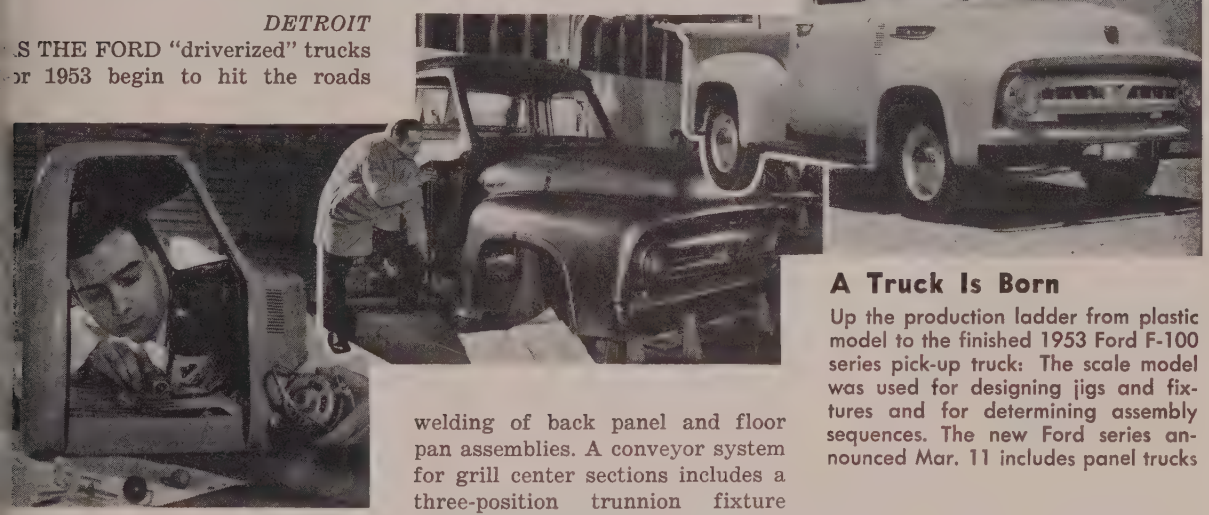
y FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

Ford makes own stampings for 1953 truck line in new Dearborn plant, where 114 presses are installed. Scale plastic models save time, ease problems in plant layout

DETROIT

.S THE FORD "driverized" trucks or 1953 begin to hit the roads



A Truck Is Born

Up the production ladder from plastic model to the finished 1953 Ford F-100 series pick-up truck: The scale model was used for designing jigs and fixtures and for determining assembly sequences. The new Ford series announced Mar. 11 includes panel trucks

his week, it's not too widely known hat there's more Ford in them nan ever before.

Until Jan. 26, truck body stamp-ngs were bought from outside nanufacturers. But on that date he Dearborn stamping plant be-an turning out truck cab parts nd assemblies. Still to be produced y outside manufacturers are owls, headlight spinners and cab arts for the cab-over-engine jobs. he rest of its truck stampings rill now be produced by Ford.

Magnitude of the Ford truck tampings venture is highlighted y the fact that 79 multiton me-hanical punch presses occupying 7,800 square feet of floor space re being utilized. Coming off the ew line are door, hood and fender ssemblies; back, floor and roof anels; and upper and lower grill ections. In addition, 35 miscellan-ous presses are used for stamping ut braces and other component arts of the truck unit assemblies.

Car Bodies, Too—According to ecent production schedules, many f the presses also turn out stamp-ngs for passenger car body parts, ut new equipment in operation in-ludes an assembly line exclusively or the truck components. One spec-al assembly conveyor handles welding of back panel and floor pan assemblies. A conveyor system for grill center sections includes a three-position trunnion fixture which rotates to bring the grill first into the load-and-lock position, then moves it to the tack welding point and finally drops the entire assembly to a lower conveyor.

Two major welding presses, originally purchased for passenger car production have been converted for use on the truck job. Engineers also discovered that a passenger car body jig when cut in two works very well for clamping two truck cabs.

Scale Models Pay Off—On the jig and fixture front, incidentally, Ford reports its utilization of scale plastic models in planning production is paying dividends. Every bracket, punch-out and louvre is incorporated in the model which is actually assembled from quarter scale reproductions of each part. They can be at work helping engineers plot assembly sequences, clamping positions and number of welds required in a matter of weeks after the final drawings are approved.

Nub of the time saving lies in the fact that wood or clay patterns for the little rascals can be rendered direct from final outline drawings. Sheet plastic, warmed to a pliable state, is formed to the contours of the pattern by pressure or vacuum. Only the one shaping operation is required and the part emerges as a perfect, wrinkle-free reproduction.

Tight Corners—Previously, when designers, stylists and engineers completed their part of the job, they handed over to the manufacturing, assembly and shipping people a sheaf of blueprints and perspective drawings from which the latter would try to visualize the new product from the three-dimensional standpoint. "You'd be surprised," say Ford engineers, "how often a weld was required where it was impossible to get a gun or a clamp." With these new models, the interrelation of the parts is readily seen, minimizing such errors.

The method is carried to its logical conclusion. Scale model jigs and fixtures are tried out on the scale truck cabs. The engineers have seen their production setup before tooling orders go out 18 months in advance of actual production time. Particularly tough spots like the juncture of windshield corner post and cab roof are frequently made in full size models to visualize production problems too intricate for even the quarter-scale models to portray.

When the tooling is finally put

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in operation on the new truck line, the business-like results of the toy-like models can readily be seen. Coupled with increasingly closer tolerances (Ford now works to plus or minus .010 on sheet metal dimensions), the production bugs are finding their engineering DDT.

1955 on the Boards—The engineers have almost forgotten the model pictured above, by the way. They're working on the 1955 line right now!

Ford's 1953 offerings feature some four new lines of trucks, 20 new series, over 190 new models, gross vehicle weight ratings from 4000 to 27,000 pounds, gross cargo weight ratings up to 55,000 pounds, 15 wheelbase lengths to accommodate bodies from 5½ feet to 19 feet in length and engines up to 155 hp.

Other Ford Notes

A four-cylinder, overhead-valve model has been added to the Ford industrial engine series. Known as the "134," the power plant develops 45 bhp at 2400 rpm and is being made at Ford's Highland Park plant.

Manufacture of automatic transmissions will start soon at Ford's Livonia, Mich., plant. Rephasing of the Patton 48 medium tank program permits conversion of the facilities to production of Fordomatic and Merc-O-Matic transmissions. The units are now being made at the Automatic Transmission Division, Cincinnati, and by Borg-Warner Corp. Production schedules at both sources will be increased in addition to assimilation of output at the Livonia plant.

Hudson Jet Flame-Out Ends

After production delays typical of "jet" manufacture, Hudson Jet and Super Jet models were hoarsely "announced" Friday. First pictures of the Jet appeared in January with deliveries expected to follow early in February. Now, just in time for spring, you can see the Hudson Jet at your dealers.

Materials, labor and "just about every other trouble in the books" contributed to the Jet production flame-out. Contributing, too, was an underground conveyor line installed for production of the new models, details of which will appear in this column in our issue next week.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,829	409,406
February	623,530*	467,691
March		517,207
April		576,505
May		546,673
June		560,947
July		246,461
August		293,722
September		592,253
October		645,862
November		556,366
December		569,696
Total		5,989,121

Week Ended	1953	1952
Feb. 7	146,809	102,406
Feb 14	147,103	111,821
Feb. 28	167,779	118,397
Mar. 7	160,616	115,126
Mar. 14	168,000*	120,392

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Hudson now runs two assembly lines—one for the Hornets and Wasps, and the other for the Jet and Super Jet. Production is now 25 units an hour, but if the car catches on as Hudson hopes, that score will be horse and buggy stuff to the Jet.

Utilizing step-down design and Monobilt body-and-frame construction, the only noninsect in the Hudson line is aimed squarely at the low-priced field. Being soft-pedaled to this end is the slightly under 105-inch wheelbase and emphasized is the 180-and-*eleven-sixteenths*-inch over-all auto length.

Packing 100-114 hp in its 2800 pound fuselage and with brakes to match, the Jet bids fair to tote its six passengers from here to there in a pretty exhilarating fashion. Body styling embodies "continental lines and a smart custom look," say Hudson officials who ought to know. The lines are particularly interesting since they portend the style-thinking for the bigger Hudsons next year, according to persistent rumors hereabouts. No secret is the fact that Hudson has stuck with the same basic body shape since 1948 and the public may begin to suspect the organization of being tool and die-hards.

Economy is underscored in the new Jets with roadability in all probability excellent. Interiors are luxurious with features akin to their higher-priced brothers. Dual-range Hydramatic is available as optional equipment. Twin-H-Power, Hudson's dual carburetor arrangement suggested by Marshall Teague for the Hornet, is optional and accounts for the 114 hp output mentioned above. Hudson now offers multiple carburetion for all its models.

Where It Really Hurts

In this column on Feb. 23, STEEL reported the prices of the four-door Chevrolet sedans as follows: "150" series, $1670; "210" series, $1761; and Bel Air series, $1874. Somewhat less obtrusive would have been a bomb dropped on the General Motors Building.

Dealers, public relations personnel and Chevrolet owners who have not written anything but a golf score for 28 years jotted down a letter to STEEL. The chorus of voices said to a man, "Chevrolet is the lowest-priced—but the *lowest*-priced—car in the low-priced field." Ford and Plymouth men just kept their big mouths shut.

But the inexorable has happened. Somehow Chevrolet supplied prices delivered in Detroit rather than factory list and the publication of the latter will now put Ford and Plymouth right back in their places, to wit: "150" series, $1530; "210" series, $1615; and Bel Air series, $1720.

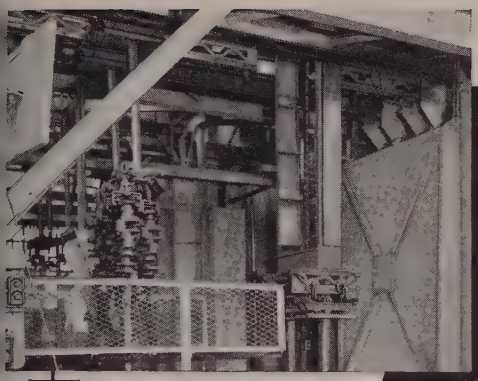
Chevrolet is the lowest-priced—but the *lowest*-priced—car in the low-priced field!

Exhaust Notes

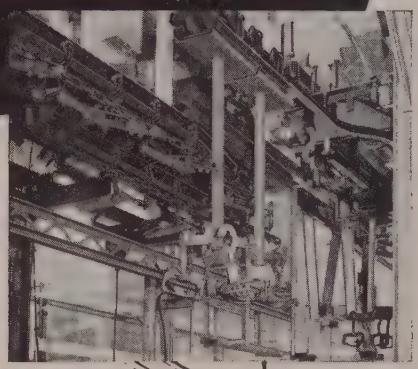
The National Automobile Dealers Association points out these facts: Taxes take 32 cents out of each auto sales dollar. Taxes on a $2000 car amount to $650. One out of every eight tax dollars collected in the United States has an automotive origin.

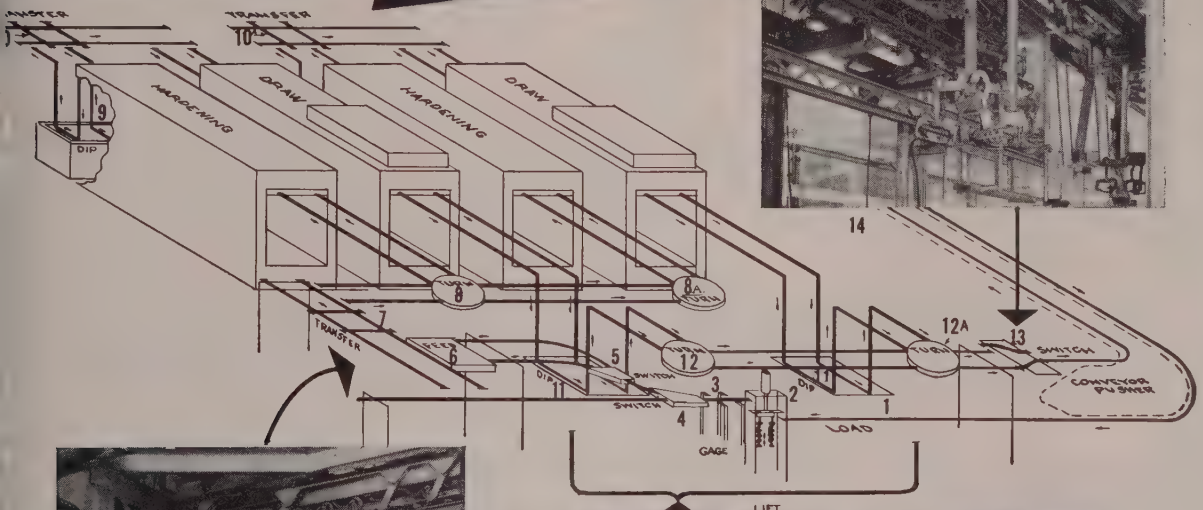
The typical car traveled more than 9300 miles last year. At his average pace of 30 miles per hour, the average motorist spent more than twenty-five 12-hour driving days in his car during 1952.

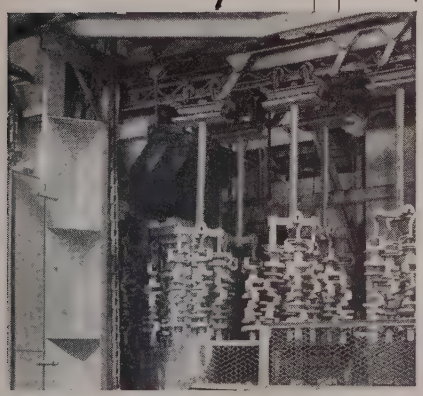
During 1952 more than 3,500,000 cars were junked.

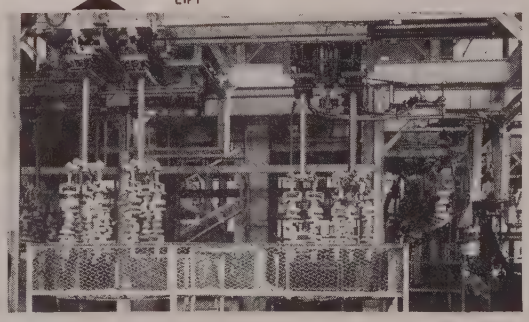


"Automation" by AMERICAN MONORAIL









KEY TO DIAGRAM

Station No. 1, Empty Carriers are loaded with 4 crankshafts and raised on Lift No. 2 to working level of furnaces. Carriers pass through gaging device No. 3 to insure concentric loading. Loaded carriers are pushed through Switch No. 4 and Switch No. 5 which are controlled manually from the floor. Carriers are deflected right or left into Feed No. 6. From this point on the system is fully automatic.

Carriers work through Automatic Feed No. 6 onto Transfer Crane No. 7 which travels and lines up with Spur Tracks going to Turntable No. 8. Carriers then move onto the turntable and rotate 90 degrees for feed through the Hardening Furnace.

Upon emerging from this furnace they are dipped into Quench Tank No. 9 and then travel on Transfer Crane No. 10 which carries racks for return travel through the Drawing Furnace. Crankshafts then travel through this furnace and when finished are cooled in Tank No. 11 and fed through Turntable No. 12.

After rotation of 90 degrees the carriers pass through Shuttle Switch No. 13 for single line movement and pick-up by Pusher Conveyor No. 14 for transfer to unloading station.

From hand operated to fully automatic handling systems, American MonoRail will save you money. Regardless of how simple or how complicated your handling problems may appear to be, American MonoRail can engineer a system to fit your needs. Experienced engineers will gladly consult with you on any handling problems. Write for the new "Case Study File" showing many varied applications.

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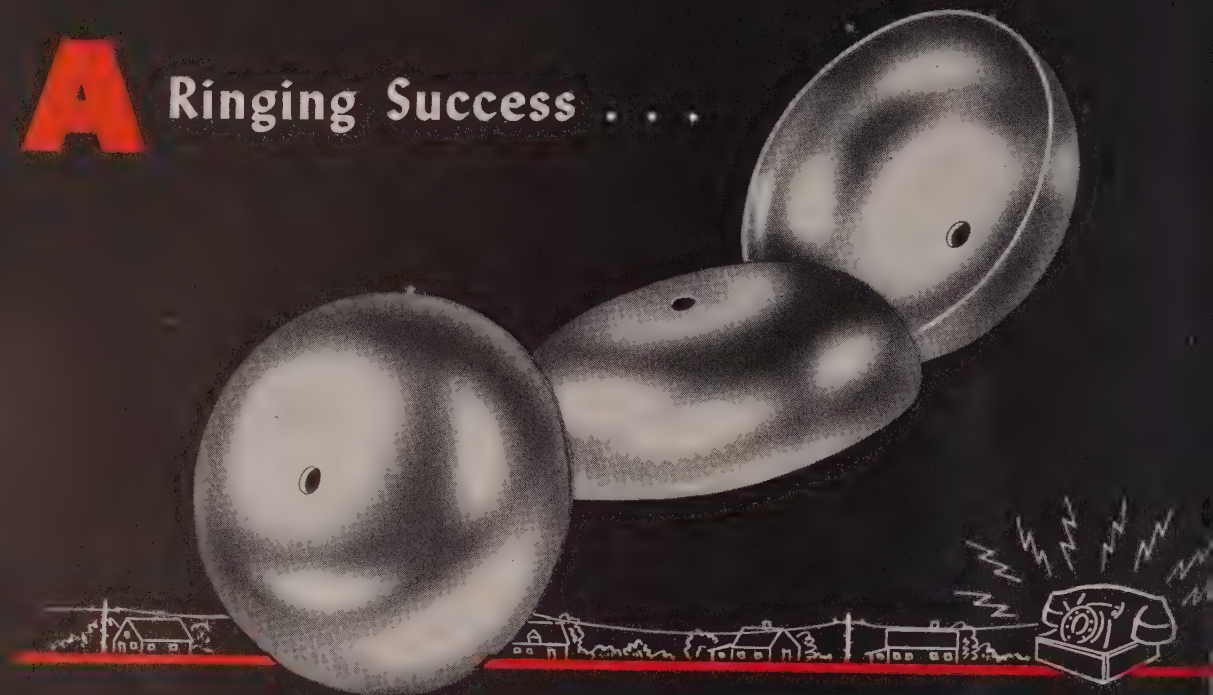
A Ringing Success . . .



SHARON DEVELOPED SPECIAL STEEL MAKES TELEPHONE BELLS RING TRUE

Shortages of critical materials often force the use of substitutions. This happened in the telephone industry, where recently a manufacturer of phone bells — cut off from his supply of copper and brass—began looking for a suitable replacement.

Steel was still on the unrationed list, but bells formed of available steel didn't produce the required ringing tone. That is until Sharon Steel was asked to develop a steel of a temper that could be formed into bells with the required tone.

Sharon engineers went to work and in a short time developed a steel that fills the bill so effectively it is expected to become standard regardless of the availability of the materials formerly used.

*Specialists in **STAINLESS, ALLOY, COLD ROLLED and COATED Strip Steels.**

SHARON STEEL CORPORATION

Sharon, Pennsylvania

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For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

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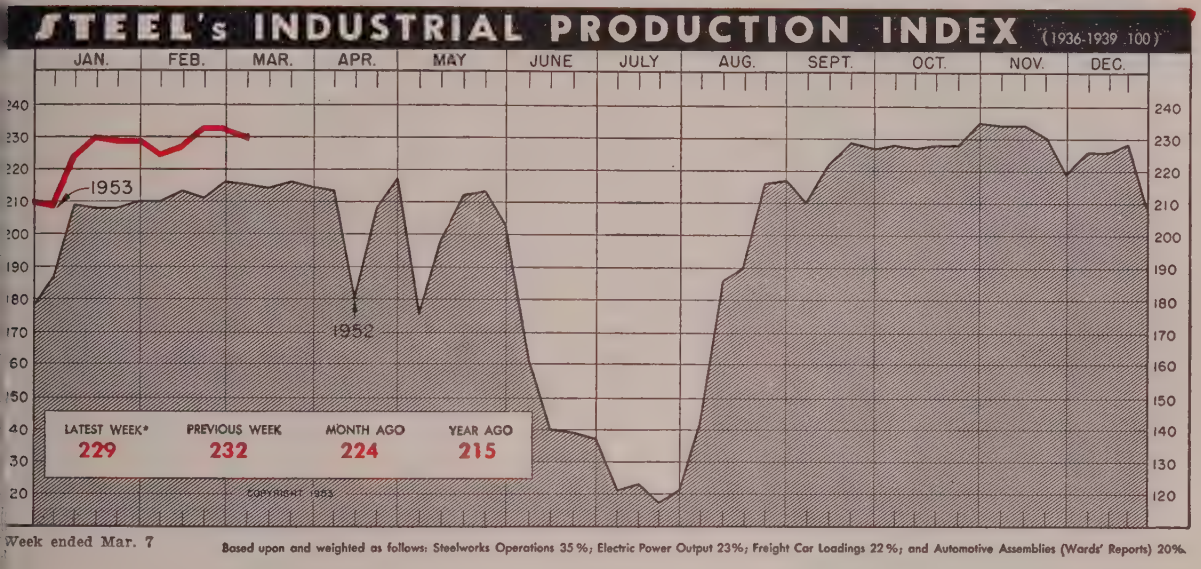

STEEL's INDUSTRIAL PRODUCTION INDEX (1936-1939 100)
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1953
1952
LATEST WEEK* 229
PREVIOUS WEEK 232
MONTH AGO 224
YEAR AGO 215
COPYRIGHT 1953
Week ended Mar. 7
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Completion of plant expansion programs enables the metalworking industry to swing production into high gear. Index dips temporarily as brief strikes hit auto firms

THE METALWORKING industry, or the most part, is spending fewr dollars on new construction than did a year ago, since most comanies have completed their heavy etooling programs and are now ulling the throttle out on assemly lines.

Industrial outlays on new conruction in 1953 are dropping bout 11 per cent under the same eriod in 1952. The Bureau of abor Statistics says private manfacturers in the first two months f 1953 spent $372 million on new onstruction, compared with $418 illion in the first two months of 952. This $46-million decline takes n added significance if you conider that most sections of the . S. during January and February ad unusually mild weather for ne season.

Business Is Good—Metalworking ompanies, however, are transactig business at a much faster pace ian a year ago. The Commerce deartment's Office of Business Ecomics says that manufacturers in anuary sold $12 billion in durbles, or 11.4 per cent over sales in anuary, 1952. New orders for hard oods climbed 7 per cent over the ear to $12.3 billion, while unfilled orders jumped 11 per cent to $69.9 billion. Inventories during the year ended Feb. 1 rose 5 per cent to $24.2 billion.

Industrial momentum is expected to continue rising throughout the first half of 1953, at least. Defense production is holding steady and civilian output is apparently on the uptrend. Many manufacturers are already testing the early spring market, and what they find looks good. Automotive and household appliance companies are particularly optimistic about consumer demand.

Temporary Decline — Industrial activity throughout the U. S. took a brief dip as March opened. STEEL's industrial production index during the week ended Mar. 7 dropped 3 points to 229 per cent of the 1936-1939 average. Most of the decline was due to brief labor difficulties in the automotive industry.

New Peak in Steel Output . . .

Steel mills are chalking up new records for weekly production, as defense demand holds firm and civilian usage continues rising. The American Iron & Steel Institute says that steel output in the week ended Mar. 7 totaled 2,262,000 net tons—highest weekly figure in history. For the week ended Mar. 14, the institute estimates that furnaces poured 2,252,000 tons of steel for ingots and castings.

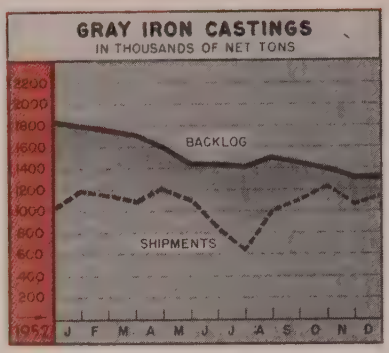
Top-Gear for Autos . . .

Automotive companies will put the wraps on a high first-quarter output if passenger car and truck production continues at the present pace.

U. S. car volume in March is expected to total around 589,000 units, or 18 per cent above the February output, says *Ward's Automotive Reports*. This production would raise first-quarter assemblies to about 1.5 million passenger vehicles, or second only to the record first quarter of 1,610,751 completions in 1951.

Manufacturers of trucks, if goals already mapped out are realized, will complete some 138,000 units during March, or only 2125 trucks under the record achieved in May, 1951. Estimates for the first quarter place truck output at 348,000 units. Only 1948 and 1951 opened with a higher number of trucks in the first quarter.

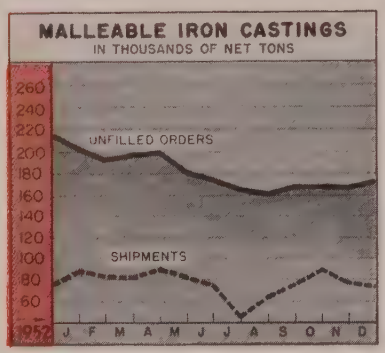
Brief walkouts at the General Motors Corp. and Chrysler Corp. in the week ended Mar. 7 trimmed U. S. and Canadian car-truck production 4.3 per cent to 160,616



Gray Iron Castings
Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	1,999	1,364	1,801	2,298
Feb.	1,155	1,234	1,766	2,392
Mar.	1,172	1,440	1,711	2,390
Apr.	1,205	1,363	1,614	2,337
May	1,101	1,396	1,459	2,229
June	835	1,309	1,445	2,162
July	636	1,029	1,410	2,208
Aug.	1,002	1,219	1,513	2,145
Sept.	1,119	1,115	1,451	2,055
Oct.	1,233	1,302	1,392	1,983
Nov.	1,061	1,184	1,309	1,934
Dec.	1,142	1,032	1,316	1,847
Total	13,660	13,768		

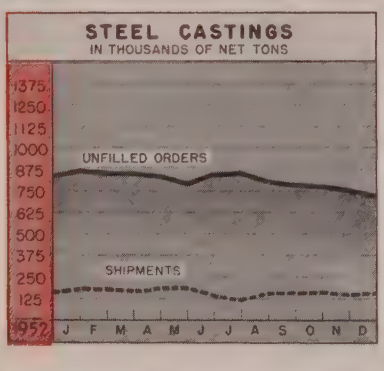
* For sale. U. S. Bureau of the Census.



Malleable Iron Castings
Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	87.0	92.5	203.0	234
Feb.	82.9	89.0	193.1	255
Mar.	81.0	101.7	196.9	267
Apr.	89.3	97.3	198.2	276
May	81.8	100.8	180.4	275
June	74.4	93.7	173.4	256
July	45.3	76.8	166.6	263
Aug.	63.7	90.7	162.8	249
Sept.	75.9	82.3	168.4	245
Oct.	88.1	93.9	168.6	238
Nov.	76.1	88.2	167.8	221
Dec.	80.1	76.0	173.5	215
Total	925.6	1,082.9		

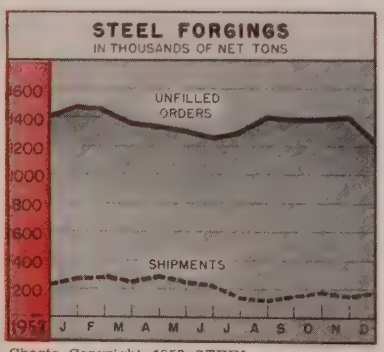
* For sale. U. S. Bureau of the Census.



Steel Castings
Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1952	1951	1952	1951
Jan.	183.7	174.1	869.3	675.4
Feb.	174.6	164.0	856.9	707.4
Mar.	173.7	190.7	857.1	779.7
Apr.	175.1	181.9	843.0	846.9
May	173.6	189.2	804.7	881.7
June	141.6	184.7	846.5	895.1
July	119.0	147.2	855.0	930.0
Aug.	150.2	177.1	809.4	944.2
Sept.	158.4	160.7	781.9	918.0
Oct.	165.2	189.9	772.9	891.5
Nov.	148.3	176.7	751.7	865.0
Dec.	161.7	165.1	719.2	846.4
Total	1,925.1	2,093.3		

* For sale. U. S. Bureau of the Census.



Steel Forgings
Thousands of Net Tons

	Shipments		Unfilled Orders	
	1952	1951	1952	1951
Jan.	271*	138	1,472*	709
Feb.	277*	129	1,464*	781
Mar.	266*	161	1,360*	875
Apr.	277*	154	1,349*	924
May	263*	266*	1,319*	1,208*
June	224*	249*	1,248*	1,264*
July	132*	220*	1,290*	1,361*
Aug.	121*	240*	1,399*	1,436*
Sept.	150*	225*	1,392*	1,419*
Oct.	178*	280*	1,393*	1,427*
Nov.	156*	256*	1,399*	1,446*
Dec.	181*	232*	1,377*	1,411*

U. S. Bureau of the Census. *Data for these months based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more. Previous data based on reports from commercial forge shops producing 3600 tons or more per year.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Feb. 23	Gear Sales .....Mar. 9	Ranges, Elec. ....Feb. 2
Durable Goods ....Mar. 9	Ironers .....Mar. 9	Ranges, Gas .....Feb. 23
Employ.,Metalwk. Jan. 18	Indus. Production..Feb. 16	Refrigerators .....Feb. 2
Employ., Steel ....Dec. 15	Machine Tools ....Feb. 9	Steel Shipments ...Nov. 3
Fab. Struc. Steel ..Feb. 9	Prices, Consumer..Jan. 26	Vacuum Cleaners..Feb. 9
Foundry Equip. ..Feb. 16	Prices, Wholesale..Jan. 26	Wages, Metalwkg..Mar. 9
Freight Cars .....Feb. 16	Pumps .....Feb. 16	Washers .....Feb. 23
Furnaces, Indus. ..Feb. 2	Radio, TV .....Feb. 2	Water Heaters ....Feb. 23

units. In the previous week, U. S. and Canadian assemblies climbed to 167,779 passenger cars and trucks, the highest unit-volume in 21 months.

TV Production High . . .

The television picture is brightening quickly as more new stations are placed into operation throughout the nation. Radio-Television Manufacturers Association says that production of TV sets in January topped all previous records for that month by reaching 719,234 units, compared with 404,932 sets in January, 1952, and 650,700 in the first month in 1951.

Radio production in January is estimated at 1,093,142 sets, the second-highest output in some 15 months. In December, 1952, which was a six-weeks statistical reporting period, radio production hit 1,325,158 units, or 232,016 units over the four weeks in January.

Near-Record in New Firms . . .

Reflecting the upsurge in business activity, the number of new businesses throughout the U. S. soared to a near-record level during January. New company formations that month totaled 9468 enterprises, the largest number for any month since January, 1948, says Dun & Bradstreet Inc. The uptrend in new enterprises was fairly general throughout the U.S. —only 15 states reported fewer incorporations in January than in the first month of 1952.

Coal Outlook Gloomy . . .

Soft coal producers are taking some hard knocks from both rising costs and declining demand. Added costs are due mainly to the wage hikes granted to miners last year, but several factors are ebbing consumer demand. Gas and oil are steadily cutting into the coal market, railroads are becoming more and more dieselized and industrial stockpiles of bituminous are unusually high. Recent addition to bituminous producers woes is the weather: Mild temperatures in many areas are trimming U. S. coal consumption far below the expected levels.

Mirroring the drop in demand, U.S. mines in the first two months

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	101.0	100.5	101.5
Electric Power Distributed (million kwhr)	8,140[1]	8,069	7,497
Bituminous Coal Output (daily av.—1000 tons)	1,408	1,420	1,716
Petroleum Production (daily av.—1000 bbl)	6,560[1]	6,521	6,367
Construction Volume (ENR—millions)	$273.7	$322.7	$296.6
Automobile, Truck Output (Ward's—units)	160,616	167,779	115,126
TRADE			
Freight Car Loadings (unit—1000 cars)	690	669	714
Business Failures (Dun & Bradstreet, number)	180	178	170
Currency in Circulation (millions)[3]	$29,772	$29,735	$28,464
Dept. Store Sales (changes from year ago)[3]	+9%	+2%	−16%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,060	$14,264	$16,910
Federal Gross Debt (billions)	$267.6	$267.5	$260.3
Bond Volume, NYSE (millions)	$17.8	$14.5	$14.5
Stocks Sales, NYSE (thousands of shares)	8,844	8,968	7,263
Loans and Investments (billions)[4]	$76.8	$77.0	$73.5
United States Gov't. Obligations Held (billions)[4]	$31.1	$31.1	$31.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	223.6	210.9	243.6
All Commodities[7]	109.5	109.2	113.0
All Commodities Other Than Farm and Foods[7]	113.2	113.1	114.3

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

f 1953 produced 73,165,000 tons f bituminous, 22 per cent less than ı the same months in 1952, esti- ıates the National Coal Associa- ion. This 22-point gap has re- ıained fairly constant throughout anuary and February; bituminous utput in the week ended Feb. 28 otaled 8.4 million tons, compared ith 10.3 million in the comparable eek, a year earlier.

Purchasing Power Increases . . .

One big factor in the optimism oiced by civilian manufacturers hese days is the increased pur- hasing power of Mr. and Mrs. ohn Doe. The Office of Business Economics says that total personal ıcome and total wages and sala- ies in January both averaged 6 er cent over January, 1952. Mean- hile, the cost of living is inching own to the levels of a year ago. he Bureau of Labor Statistics ays that the cost of living in Janu- ry edged down for the third con- ecutive month. Consumer prices aid by the average urban family uring January were only 0.7 per ent over the same month in 1952.

Retailers' Sales Firm . . .

The approach of spring and idespread promotion activity are eeping retailers' sales over those of a year ago. The Federal Reserve Board says that department store sales in February rose about 4 per cent over the same month in 1952. Merchants in most cities reported year-to-year increases in volume, although consumer demand is lagging in New York and some other cities in eastern sections of the U. S.

Railroad Income Climbs . . .

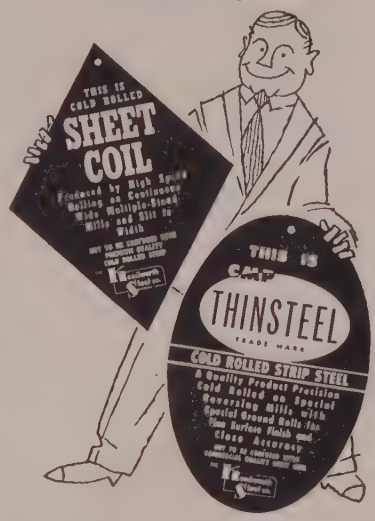
Railroads are making a considerable saving through cost-cutting methods. Class I railroads in January marked up a net income after interest and rentals of $58 million, compared with $42 million in the same month in 1952. Operating revenues increased only 0.5 per cent, about $4.1 million, while expenses in January dropped 3.5 per cent (nearly $24 million) from costs in January, 1952.

Trends Fore and Aft . . .

Shipments of propellers for military aircraft rose 47 per cent last year . . . Electricity production in the central industrial area of the U.S. is surging more than 10 per cent over a year ago . . . Shipments of construction machinery—excavating and earthmoving equipment—in the fourth quarter of 1952 rose 23 per cent over the previous three months.

How to be right—always

When you buy . . . .

Cold Rolled Strip Steel

Approximately six months ago, Kenilworth adopted the policy of identifying all cold rolled strip steel shipped to customers by tagging each coil. Copies of the tags used are illustrated above. Because Kenilworth wants you to get the cold rolled strip steel you need and to be certain that you only pay for what you get, it is right to clearly classify the two kinds of cold rolled strip steel and tell you the advantages and disadvantages of both. Kenilworth stocks and sells both and is in a position to offer unbiased recommendations to help you select the steel which is best suited to your needs and which will cost you less in the end.

In cases where quality requirements are not too stringent, we have been able to save money for customers by suggesting a switch to Sheet Coil—fine where variation in physicals are permissible and gauge variations are not objectionable or where a fine surface finish is not required. In other cases, because its better physicals permit use of lighter gauges and because of assured maximum parts yield and greatly increased tool life, we've been able to show users how they can pay more for Thinsteel and still cut costs.

NORMALLY "IN STOCK" AT KENILWORTH

• Tempered Spring Steel • Republic-Enduro Stainless Steel Sheets • Cold Metal Thinsteel • Tin Coated Steel in Coils • Shim Steel—Coils and Cut Lengths • High Carbon Cold Rolled Strip • Low Carbon Sheets and Coils • CMP Thinsteel Stainless Strip • Low Carbon Cold Rolled Strip

• Precision Slitting • Shearing • Leveling Service

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750 BOULEVARD, KENILWORTH, NEW JERSEY

SPECIALISTS IN FLAT ROLLED METAL PRODUCTS

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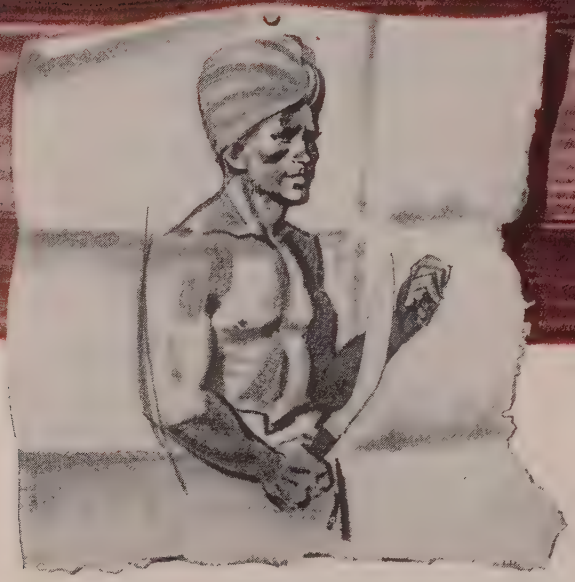
N. J. UNionville 2-6900
Teletype: Roselle, N. J., 387

famous blades

The Kukri

...blade of the Gurkha Warrior



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famous for their service to modern industry

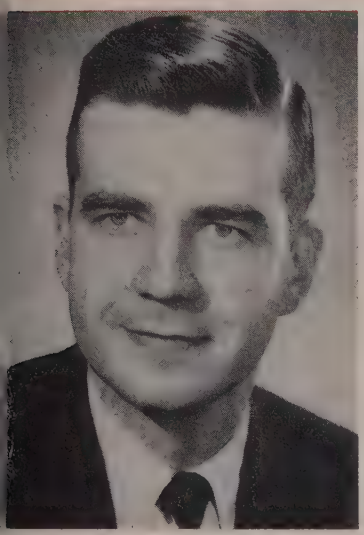
Heppenstall Shear Knives are known throughout the Metalworking Industry for their dependable, low-cost performance. These are the blades that provide: *More cuts between grinds* • *More units per blade* • *Lower overall blade cost* • *Faster, more dependable production.* Make Heppenstall Shear Knives your standard specification.

Heppenstall—*the most dependable name in Shear Knives*

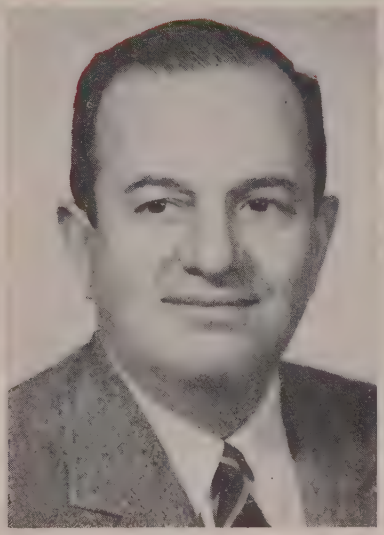
PITTSBURGH 1, PENNSYLVANIA

Sales Offices and Distributors in principal cities

Men of Industry



FRED B. SHEW
. . . bucket sales mgr. at Wellman Eng.



BYRON L. FOSTER
. . . president of L. B. Foster Co.

JOHN R. FREEMAN JR.
. . . a V. P. at American Brass

red B. Shew was named sales anager, bucket department, Well- an Engineering Co., Cleveland. e transfers to Cleveland from the hicago office where he served as strict manager.

ppointments made by the sales epartment of **Brake Shoe & Cast- gs Division,** American Brake hoe Co., New York, include **John . Ducey Jr.** as vice president, **eorge E. Anne** as assistant vice resident and **Daniel J. Wagner** strict sales manager at Chicago. r. Ducey is located in San Fran- sco, Mr. Anne in Philadelphia.

. S. Drill Head Co., Cincinnati, ected **A. P. Speckin,** former gen- al manager, as president. **J. R. ashor** becomes vice president and **/. K. Francis** secretary and treas- rer. **W. C. Moening,** former part- er, was elected board chairman.

arry L. Jentner was promoted to leveland district manager of oper- ions, **American Steel & Wire Divi- on,** U. S. Steel Corp. He succeds **lbert J. Hoyt,** retired.

. A. Wondracheck, manufacturing anager of **General Motors Corp.'s** lectro-Motive Division, was pro- oted to a similar post in the com- any's Fabricast Division, Bedford, d. He succeeds **E. E. Ward,** on ave of absence, who on return ill be assistant to G. A. Zink.

Byron L. Foster was elected president of **L. B. Foster Co.,** Pittsburgh. He succeeds **Lee B. Foster,** founder of the firm, who now becomes chairman of the board.

Donora Steel & Wire Works, Donora, Pa., American Steel & Wire Division, U. S. Steel Corp., appointed **Joseph J. Just** assistant to general superintendent. He succeeds **Charles Witherspoon,** retired. Mr. Just has been division superintendent, wire and wire products and is replaced by **John T. McHugh.**

R. T. Harcus was elected to the newly created office of executive vice president, **Byron Jackson Co.,** Los Angeles. He also replaces **Charles S. Thomas** on the board of directors.

Gisholt Machine Co., Madison, Wis., elected **Werner I. Senger** to the newly created position of vice president in charge of balancing. With Gisholt over 35 years, he has been in charge of balancing machine development and engineering since 1924.

Crane Co., Chicago, named **V. P. Rumely** senior vice president in charge of manufacturing activities. **L. N. Blugerman,** executive assistant, was appointed a vice president in charge of production in the Chicago and Chattanooga, Tenn., plants.

John R. Freeman Jr. was appointed vice president of metallurgy and research of **American Brass Co.,** Waterbury, Conn. He has been technical manager of the company.

H. P. Rees was promoted to assistant vice president, **Sharon Steel Corp.,** Sharon, Pa. **W. J. McGaffney** was appointed general works manager, Lowellville Works. Appointments at the Roemer Works include **Henry Evans** as general works manager, **W. A. Horning** assistant general works manager, **Howard Sahli** superintendent of hot strip mills, **R. A. Filer** superintendent of finishing division, **John Murray** superintendent of the cold rolling department, **Clarence Houk** superintendent of the pickling department, and **Dale Bartholomew** superintendent of blast furnaces.

A. F. Wiest was placed in charge of all manufacturing operations for **Carpenter Steel Co.'s** alloy tube division at Union, N. J. He succeeds **John A. Dietrick.**

David A. McQuade was named manager, industrial relations department, **Westinghouse Electric Corp.'s** lighting division at Cleveland, to succeed **D. E. Jenkins,** now works manager of the Vicksburg, Miss., lighting division plant. **Jerry R. McAdams,** assistant engineer at the Reform, Ala., plant is industrial relations representative suc-

RAYMOND C. GINTERT

GEORGE N. HARMON

. . . appointments at Republic Steel Corp.

ceeding **Richard Smith**, transferred to the Bloomfield, N. J., lamp division.

Raymond C. Gintert, superintendent of hot mills at **Republic Steel Corp.'s** Warren, O., district operations from 1937 to 1946, returns to Warren as district manager. He succeeds the late **Frank E. Flynn.** Mr. Gintert has been general superintendent of the company's 98-inch strip mill at Cleveland where he is succeeded by **George N. Harmon,** formerly assistant general superintendent.

Armco Drainage & Metal Products Inc., Washington Court House, O., subsidiary of Armco Steel Corp., appointed **Miles W. Bixby** superintendent of its new fabricating plant now under construction at Mansfield, Pa. **Charles W. Hall** succeeds Mr. Bixby as superintendent of the Ashland, O., plant.

Larry J. Kuhn is division traffic representative for **Berger Mfg. Division,** Canton, O., Republic Steel Corp. He succeeds **Earl W. Huberty,** retired.

Sterling Engineering Co., Laconia, N. H., subsidiary of American Machine & Foundry Co., elected **Warren G. Leonard** vice president, general manager and a director. **Kenneth A. Killam** was named vice president in charge of engineering. **George Colby,** general manager of the AMF electronics division at Boston, was also elected a director.

Orville T. Barnett is district manager, central division, for the welding sales department of **A. O. Smith Corp.** He operates out of Chicago.

E. W. Ristau was elected vice president in charge of sales, Power Tool Division, **Rockwell Mfg. Co.,** Pittsburgh. He began his career in the power tool field with Skilsaw Inc. where he became vice president. He joined Rockwell in 1951 as general manager, Rockwell Tools Inc. In 1952 he was made director of sales and advertising, Delta Power Tool Division.

W. T. Willey was made manager of the newly formed southwest district of **Republic Rubber Division,** Lee Rubber & Tire Corp. He will have headquarters in Tulsa, Okla. Other members of the new district sales organization include **R. L. Cravens,** who will have headquarters in Dallas, **D. L. Cushing** in Houston and **R. E. McQuiston** in Midland, Tex.

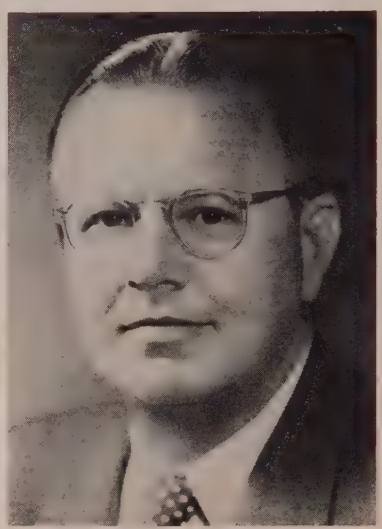
Rodney Hunt Machine Co., Orange, Mass., appointed **David A. Kuniholm** as manager of its special products division in addition to his duties as manager, industrial roll division.

Duanne R. Lamiman was named district sales manager, New York, of **United States Gauge Division,** American Machine & Metals Inc., Sellersville, Pa.

C. C. Hurlburt joined **Klincher Locknut Corp.,** Indianapolis, as director of engineering. He has been associated with the aircraft industry for 14 years.

Frank W. Fink, chief engineer of **Consolidated Vultee Aircraft Corp.'s** San Diego, Calif., division, is currently serving as acting works manager of Plant I there.

I. Joseph Stubinski was promoted to secretary of **Keystone Drawn Steel Co.,** Spring City, Pa. He succeeds **Walter F. Graham,** retired. He joined the company in 1934. In



E W. RISTAU
. . . Rockwell div. V. P.-sales

I. JOSEPH STUBINSKI
. . . Keystone Drawn Steel secretary

ANNOUNCING 4 NEW CUTTING OILS!

2 DUAL-PURPOSE OILS (lubrication and cutting)

SUNICUT 11-S for medium duty on automatic screw machines

SUNICUT 209-S for heavy duty on automatic screw machines

2 SINGLE-PURPOSE OILS (cutting only)

SUNICUT 102-S for heavy duty on automatic screw machines

SUNICUT 110-S for heavy duty service in broaching, threading, gear cutting, heading and similar applications

All four oils keep parts and tools cooler, help maintain closer work tolerances, permit longer runs between tool dressings. All are odorless and light in color. In addition, Sunicut 11-S and 209-S have high lubricating value and are nonstaining.

For your copies of the technical bulletins describing these new oils, call the nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. S-3.

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WALTER J. KALLMEYER
. . . Standard Steel chief engineer

HAL ERNST
. . . div. sales mgr. at Blackhawk Mfg.

1951 he was made assistant secretary.

Walter J. Kallmeyer was appointed chief engineer, **Standard Steel Corp.**, Los Angeles. He formerly was works manager, Blaw-Knox Co.

Hydraulic Press Mfg. Co., Mt. Gilead, O., appointed **Roy O. Johnson** metallurgist and **Charles W. Eastman** industrial engineer.

Mueller Brass Co., Port Huron, Mich., appointed **F. F. House** sales manager of its Philadelphia territory.

J. P. Coughlin was made manager, arc welding department, **Westinghouse Electric Corp.**, Pittsburgh.

Hal Ernst was appointed sales manager, hydraulic control division, **Blackhawk Mfg. Co.**, Milwaukee. Since 1949 he has served as a field representative for the company's equipment division and prior to that was a field engineer for Gardner-Denver Co.

Samuel W. Vaughan, purchase analyst, succeeds **Clarence E. Michaels**, retired, as assistant to the purchasing agent, **Tennessee Coal & Iron Division**, Birmingham, U. S. Steel Corp.

Richard M. Scaife was elected a director of **Scaife Co.**, Pittsburgh. He is now a member of the research staff of Multiple Fellowship sustained by Scaife Co. at Mellon Institute.

John R. Carlson is now president of **Tractomotive Corp.**, Deerfield, Ill. He succeeds the late **Vander M. Dobeus** and continues as general manager.

Calvin A. Burton, former conveyor sales manager, **Lamson Corp.**, Syracuse, N. Y., was promoted to assistant to the president.

David M. Nason, former purchasing agent at New Holland Machine Division, Sperry Corp., joins **Piasecki Helicopter Corp.**, Morton, Pa., as assistant materiel manager.

A. W. Cash Co., Decatur, Ill., appointed **Earl E. Tinker** manager, development and research, and **Eugene Azud** manager, marketing and sales promotion. **Earl Gray** is assistant to Mr. Tinker.

L. G. Bygrave was made manager of sales at the **Craine-Schrage Steel Division**, Detroit Steel Corp. He formerly was assistant sales manager, Detroit district sales office, now located at the Craine-Schrage plant, 13770 Joy Rd., where he will supervise all warehouse and direct mill bar steel sales.

Harold G. Haines, metallurgist with Howard Foundry Co., joined **Burke Industries**, Chicago, spinner of copper and brass, as general manager.

A. A. Probeck was elected vice president, **Snap-Tite Inc.**, Union City, Pa.

Bryan Rudder was appointed a direct salesman for the Philadelphia

(*Please turn to Page* 136)

OBITUARIES...

Charles C. Bradford, 68, vice president, **Eaton Mfg. Co.** and head of its heater division, Cleveland, died Mar. 7.

Lewis E. Spear, 85, founder and president, **Pacific Wire Rope Co.**, Los Angeles, died Mar. 3.

Warren W. Prim, structural engineer and general manager, structural division, **Savannah Machine & Foundry Co.**, Savannah, Ga., died Mar. 1 as result of injuries received in an auto accident.

W. C. Domino, for 20 years sales manager for West Steel Castings Co., Cleveland, who in recent years represented **Swedish Crucible Steel Co.**, Detroit, died recently.

J. A. McKeage, 60, founder and president, **McKeage Machinery Co.**, Brooklyn, N. Y., died recently.

Harry Cobey, 70, chairman of **Perfection Steel Body Co.**, Galion, O., died Mar. 2.

Milton M. Weist, 55, manager, **Air Reduction Sales Co.**, Minneapolis, died Mar. 6 in Florida.

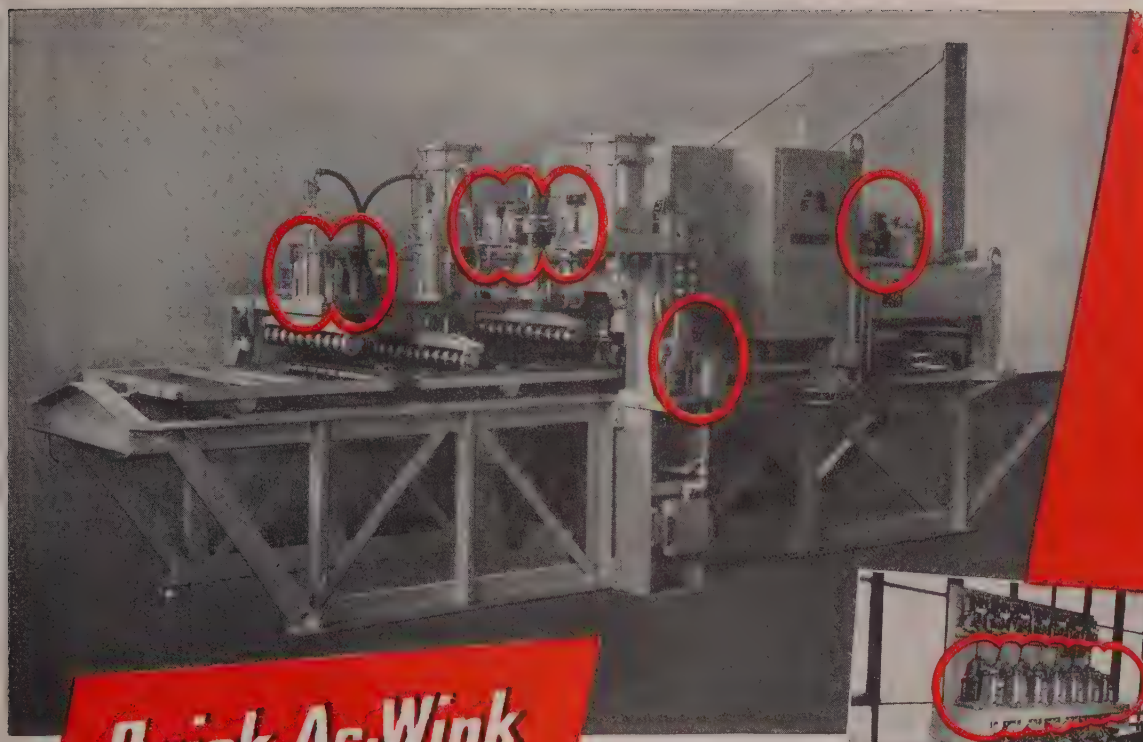
William B. Greenlee, 80, chairman of **Greenlee Bros. Inc.**, Rockford, Ill., **Greenlee Foundry Co.**, and **Northwestern Stove Repair Co.** and **Northwestern Foundry Co.**, Chicago, died Mar. 1.

E. F. Berlinger, 73, chairman, **Quaker City Gear Works**, Bethayres, Pa., died Mar. 3.

Alexander MacKenzie, 65, division sales manager. **General Steel Wares**, Toronto, Ont., died Mar. 3.

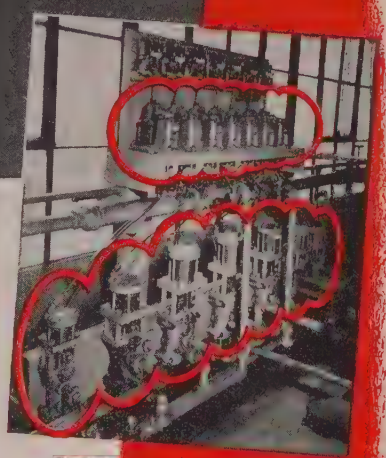
Oliver D. Kingsland, 70, head of **Kingsland Wire Works**, Rochester, N. Y., died Mar. 3. He founded the company in 1932.

Arthur G. Kornitz, 38, wholesale sales manager, **Perfex Corp.**, Milwaukee, died Mar. 1 of a heart attack.



Quick-As-Wink Air Valves on Multiple Welding Machine.

Quick-As-Wink Control Valves



Quick-As-Wink Valves for Hydraulic Testing Machine.

synchronize and coordinate related machine operations

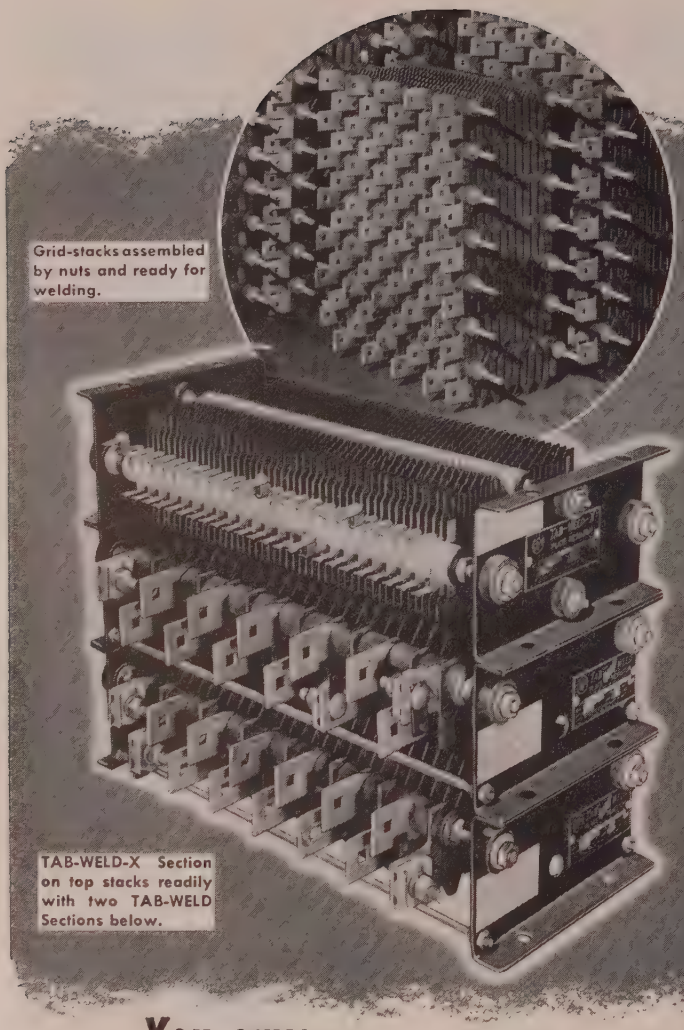
Those successive and inter-related machine operations — that speed manufacture and cut costs — can only be as successful as the air and hydraulic control valves you use. Specify Quick-As-Wink Control Valves. Positive and fast acting, Quick-As-Wink Valves are designed and built to meet the most exacting requirements. Danger of "repeating", major cause of break-downs and accidents, is practically eliminated. They will deliver dependable and precision performance month after month, and year after year. Foremen and superintendents know there's nothing better than Quick-As-Wink Control Valves. Can *you* afford to gamble with less?

Quick-As-Wink Valves Controlling Entry of Sheet into Terne Coating Line.

Quick-As-Wink AIR AND HYDRAULIC Control Valves

Hand, Foot, Cam, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio



Grid-stacks assembled by nuts and ready for welding.

TAB-WELD-X Section on top stacks readily with two TAB-WELD Sections below.

clamped by nuts . . . then WELDED

Spot-welded to insure continuous current-path.

You save on UPKEEP with this added feature

EC&M TAB-WELD Plate Resistor Sections are assembled on rods to form the grid-stack like any other grid section. Clamping-nuts squeeze the grids into intimate contact internally before the end-frames are added.

Then, in these EC&M sections, the tab-ends of adjacent grids and tap-plates are *welded* to maintain intimate contact and to eliminate burning at the grid-eyes and at the tap-plates. This is an exclusive EC&M feature. Tests show that welding stabilizes the OHMIC value of the section, independent of clamping-nut pressure.

In addition, EC&M TAB-WELD Plate Resistors can be used without alteration, from the storeroom shelf. On-the-job connections are easily made to any of the tap-plates . . . small adjustments in resistance-value readily available by moving only the external-lead and terminal-block.

SPECIFY

EC&M BULLETIN

942

WELDED PLATE RESISTORS

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET ★ CLEVELAND 4, OHIO

Production and Engineering
NEWS AT A GLANCE

OUT OF THE LABORATORY—Building the atomic powered submarine and other similar twentieth century wonders wouldn't be possible without what was a little known laboratory metal until recently. Making it wasn't enough since to be usable the metal must be in purest form. Since Westinghouse went into the zirconium producing field the work performed by the company's scientists and engineers helped make production by the ton rather than the pound possible and brought the price down from $250 a pound to less than $15 a pound. Tonnage is still small and the price relatively high compared with the better known metals but a big step toward making zirconium a well accepted member of the family of metals has now become an accomplished fact.

UNSEEN BRAKE—In spite of the phenomenal growth of the electronics industry and in spite of all the glowing and almost reverent praise for what it can do—someone is dragging his feet. To date, the rest of industry has not shared fully in the fruits of the electronic orchard. One reason is the economics of the situation. Electronic theory can provide for an almost wand-waving accomplishment of many and varied functions. Still, when it comes to applying the theory to your individual operation, up goes the cost. With some more experience in application, engineers will get the cost down, but so far it's still high. That's just one of the many reasons which have given growing pains to the electronics industry. p. 96

LASTING BEAUTY—Lightweight metal parts with a permanently lustrous high finish that isn't affected by salt water submersion are possible with Lurium, a new metal made in Western Germany and imported into the U.S. Basis of the metal's high finish is said to be the highest purity aluminum achieved commercially. Typical installations abroad include ornamental trim for automobiles, appliances, lighting fixtures, jewelry, etc. Alloyed with varying percentages of magnesium for different applications, the metal is work hardening, easy to fabricate and may be anodized and dyed in a variety of colors to simulate other metals. An American plant will process the metal for domestic fabricators or finishing can be done under a licensing arrangement with Fromson Orban.

CLOSE WORK—Inspecting to millionths of an inch is a tough job even in these days where precision jobs are commonplace. An unusual gaging problem posed by a defense contract called for the checking of cylindrical pins at four points to plus or minus 0.000005-inch. Cleveland Instrument Co. developed equipment to do the job. The operator places the piece on a pair of cylindrical guide rails using tweezers to prevent distortion due to body heat. He then depresses a lever at the front and a motor-driven pusher moves the work to the right at constant speed between an anvil and the gage head. A recorder chart shows the division from nominal diameter in millionths of an inch along the full length of the work. Synchronizing the chart paper drive with the movement of the work past the gage head permits reading the measurements at desired points along the length of the piece.

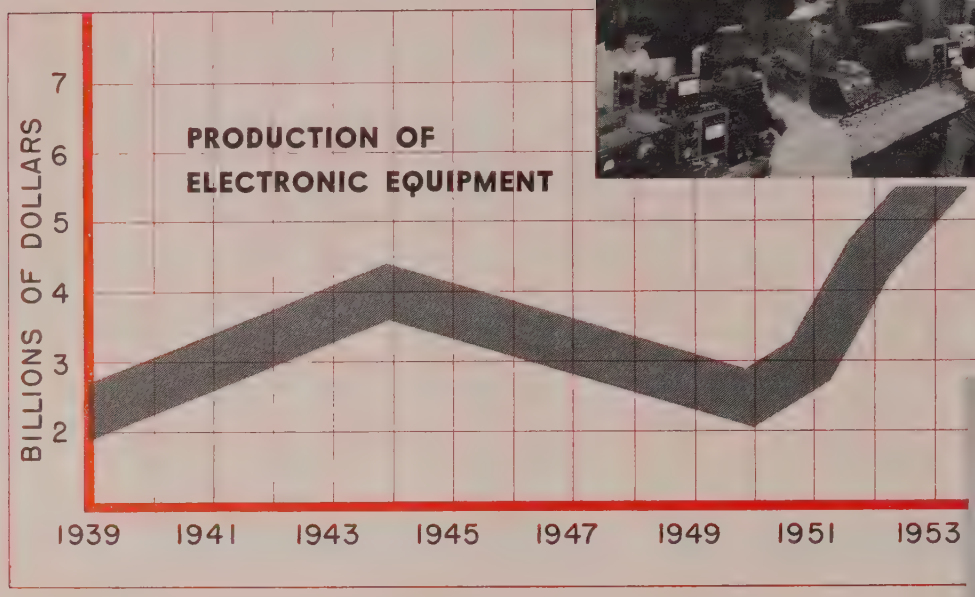
NODULAR IRON IN PRODUCTION—Ductile iron has been on the market long enough for an evaluation of its merits. Results point to the fact that it is a good engineering material which will take its place with the other cast ferrous materials. Cooper-Bessemer, first licensee of International Nickel for nodular iron, turned out some 900 tons of nodular iron castings last year. Most of the castings are large and have rather heavy sections. Experiments are pointed toward application in compressors and in diesel and gas engines. p. 102

EASY DOES IT—A free machining screw steel for making screws, nuts, studs, bolts and other small machined products is being produced by the open-hearth process at Jones & Laughlin Steel Corp. Designated the 1200 series by the company it's analysis is comparable to the AISI 1200 series and SAE 1100 series. First heats were made in a pilot open-hearth furnace and showed good rolling characteristics, high quality surface, satisfactory response to cold drawing and excellent machinability. Mill size heats distributed to screw machine shops confirmed the laboratory experience that the steel permits high production speeds, good finish and long tool life.

NEITHER DOWN OR OUT—United Nations report advocating use of a low furnace and oxygen-rich air raises a point of contention about the merits of the blast furnace. Similar views regarding obsolescence of the blast furnace have been advanced from time to time with periodic revival of the belief that a low-temperature reducing operation can be used. Three advantages of the blast furnace which seem to be forgotten are: Its mechanical efficiency for handling raw materials and finished product, ability to utilize by-products, and ability to produce to exacting chemical specifications. p. 110

STUDS AID EXTRUSION—New processes often foster the use of well established practices in novel ways. U.S. Steel Corp.'s hot extrusion setup just unveiled, for instance, uses stud welding to help move its billets through a three-zone gas heated furnace and a barium chloride bath. The Nelson flux-filled studs are welded by semiautomatic equipment onto billets weighing up to 400 pounds and eliminate the need for baskets normally required to move the billets through the heating setup. Heads of the studs fit into slots in alloy cast steel hangars on an overhead conveyor. An air-driven chisel removes the studs prior to extrusion.

Metalworking Outlook—p. 59 *Market Outlook—p. 175*



By ART ZIMMERMAN and THOMAS F. HRUBY
Assistant Editors

INDUSTRIAL ELECTRONICS

A Young Giant With Growing Pains

PHENOMENAL GROWTH in the entire field of electronics has led more than one metalworking executive to ask: "Where are the electronic devices we can afford to use?"

The answer is twofold. Theoretical know-how has not yet been concentrated on problems peculiar to industrial applications; and, at the same time, industry itself has not helped electronics bridge the gap between ideas and applications. There are encouraging signs that both sides are awakening.

Here to Stay—No one can debunk the potential of this fastest growing of all American industries. From production of about $230 million in 1939 (see chart), it has grown to an output of about $4.5 billion in 1952, should exceed $5 billion in production for 1953, may reach $20 billion by 1960. The renewal sales manager for one large electronics firm describes the national electronic renewal volume as springing from $420 million in 1950 to $500 million in 1951, $600 million in 1952 and predicts a $1 billion replacement market in 1955 and a $2 billion market by 1960.

A recent survey by the Research & Development Board of the Defense department shows electronic research accounts for approximately 27 per cent of the $2 billion total being spent for industrial research and development work. Of this $550 million in electronic research, some 59 per cent is on government projects.

Hot House Growth—Military and communications electronics have spurted ahead with the impetus of such government-sponsored research. Ninety per cent of the development money for computers is said to have come from government research contracts. Military electronics spending is expected to reach a $3 billion annual rate by mid-1953 and level out there. Why? The military is using progressively more electronic equipment each year. Two dramatic examples of what has happened in all branches of the military service are found in military aircraft. In one of our new type airplanes, 40 per cent of the total cost is tied up in electronic equipment. One of our large bombers has a total of some 1200 vacuum tubes for control of the plane, navigation, communication, locating the target and fire control.

In civilian communications, the television industry produced fewer than 6000 sets in 1946 and more than 6 million sets in 1952. Some 20 million TV sets are now in operation. There should be about 200 TV stations on the air by the end of 1953 and optimistic executives in the field say the number will eventually reach 1500 to 2000.

Very-high frequency and ultra-high frequency transmission and color television are birds already in the hand which will open replacement and new equipment markets heretofore untapped.

Economics of Electronics

With such mighty and rapid steps in commercial and military applications of electronics, why did industrial electronic sales amount to less than $500 million in 1952?

Will It Pay?—The answer lies in the economics of development, besides the incubation period required for the technical development. Electronic manufacturers must have, and as yet do not have, a clear idea of what the customer wants, what price will be paid for electronic products and what functional characteristics are most desirable in industry.

Here, then, is the nub of the problem. Some way must be found to make the common denominator needs of industry felt in the electronics lab. *The ideas for practical, mass-production applications of electronics must come from industry itself.*

Two-Way Street — A program of education is needed. In the pre-Korean period, many industrial leaders were highly skeptical of electronic devices, particularly the fragile-looking vacuum tube. Today, executives in electronic manufacturing are concerned lest industry become oversold and expect too much from electronics too soon. The best way for an interested metalworking firm to make its needs felt and, at the same time, learn what is feasible with existing electronic equipment is to take its problem to representative manufacturers in the electronics field.

The electronics industry stands today where the automotive industry found itself in the early 1900s —scattered and disorganized. Beyond the recognized companies in the field, whose origins can be traced to radio work or later to military and communications work, there are a myriad of small loft shops springing up overnight to exploit a particular application. These idea shops operate with limited capital, limited applications and, in most cases, with limited capacity for development of items other than their specialty.

Who Does What—One leader in the electronics field breaks down the recognizable portion of the industry this way: There are about 200 manufacturers-assemblers and about 150 parts suppliers. Of the manufacturers-assemblers, 50 have annual billings in excess of $5 million, and of these, 40 run to $10 million or more. Among the latter 40 companies, 10 companies design and build a big share of the military electronics equipment, and together produce 25 per cent of home television equipment; 30 companies concentrate on home equipment and make about 60 per cent of the industry's volume, but do little or no government work. The remaining 160-plus companies produce about 15 per cent of the home electronic equipment.

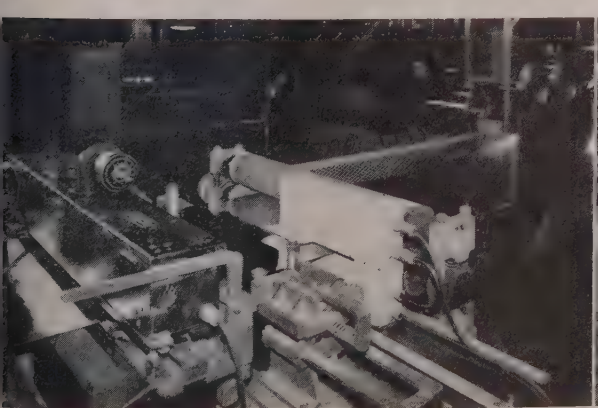
Beyond the above companies, there are thousands of the small loft shops, and a large portion of their output goes into commercial or industrial applications. Such a loose industry setup leads to distribution problems and tends to mute the demands of industrial electronic producers on component parts suppliers.

Shakeout Needed—These problems, it's conceded by electronic manufacturers, will work themselves out as the industry passes through a period of intense competition and consolidation. It will hardly come before military demands lessen to a marked degree.

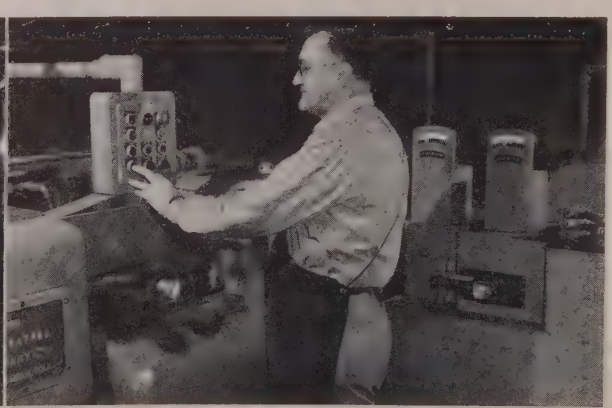
At that time, an army of new electro-mechanical engineers will turn toward industrial applications, too. As the head of a New York investment firm puts it: "Radio emerged suddenly from World War I; and television, in its present form, from World War II. It is reasonable to assume, therefore, that when the experts are able to turn to the peaceful civilian applications of this new science, the industry's basic research will have been completed so that commercial exploitation can begin immediately." Industry will then begin drawing on a backlog of know-how gained from military research and development.

Technical Evolution

Real curtain raiser for industrial electronics was World War II. Though many principles were old and well established before the first gun ever boomed, electronics had been looked upon as a myste-



Photoelectric scanner detects and marks even the smallest pinholes in the strip, while the x-ray gage to its right keeps a running check on the thickness uniformity



Electronic scale at right detects any overweight in connecting rod and automatically sets the milling machine at left to remove it and bring the part into balance

rious tool to which many fabulous powers had been attributed. Little general interest had been aroused in industry outside of the power rectification field. But the war changed all that.

Manpower shortages and government contracts forced industrial men to give the electronic "gimmicks" a try. Among the biggest users of electronic drive regulating equipment was the machine tool industry, and the metal fabricating industries were quick to snap up the resistance welding units. Reactions were mixed. While all recognized the advantages of electronic circuitry, the spotty performance records turned more than one user against things electronic.

Reasons Are Clear — Biggest headache to electronics people at that time was lack of reliability or anything resembling predictable life in the components of their circuits. Paradoxically, this opportunity to sell electronics to a vast new market came at a time when nearly every brain in the electronics industry was taxed in the service of Uncle Sam. Consequently there was little time to iron small bugs out of circuitry, work on more reliable parts, train plant service people properly, and do all the other things that add up to good application engineering.

But the war had some stimulating effects, too. As a result of the various military subcontracts taken during the war, electronic equipment for testing and measuring introduced many industries to its use. That wartime experience provided many plants with personnel who can understand and maintain electronic equipment. Add to this number the thousands of men who received military training in electronics and you get a substantial nucleus of experienced men to disseminate throughout industry. This one factor, more than anything else is responsible for the growing use of electronic devices today.

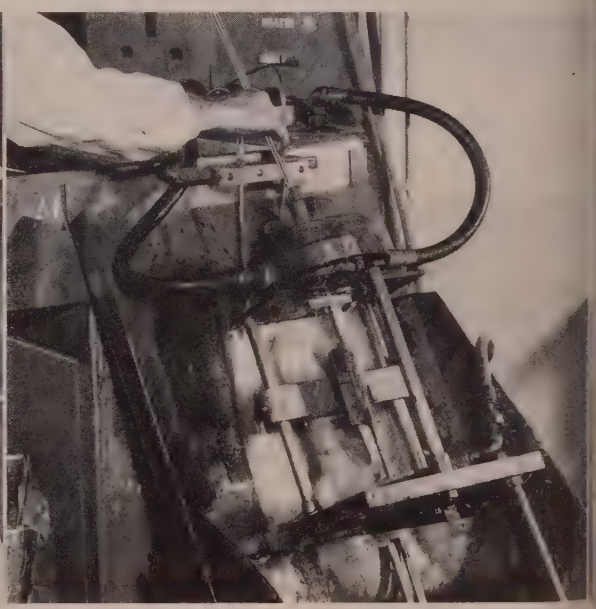
Tube Troubles — Big stumbling block is still the matter of tube reliability. Radio and TV-type tubes, though vastly improved themselves, fall short in most industrial circuitry. Predictable life, of little consequence in your radio, is a must on industrial applications where a failure could cost several thousand dollars. But until fairly recently, few tube builders were interested in building the more rugged industrial types because the volume was so small in comparison to the more common radio tubes.

Tube miniaturization has helped considerably, making it possible to reduce plate voltages and build a more shock-resistant tube. Another system, based on the experience that if a tube is going to fail it does so in the first few hundred hours, gives tubes a 2000-hour test before leaving the factory. Still another approach is the unitization of circuits, making it possible for the maintenance personnel to discover in a hurry which portion of the circuitry has failed. By substituting healthy circuits for unknowns, the dead circuit is detected in much the same way that Christmas tree bulbs are tested.

Outside Competition — Tube troubles on one hand and the very desirable high speed of response and accuracy on the other had still another effect. Electrical manufacturers reopened research into magnetic circuitry in the hopes that new materials and techniques might enable them to duplicate the functions of electronic circuitry. Magnetic amplification is an old concept, but slow speed of response and low amplification as compared to electronic amplifiers had formerly kept it pretty much in the field of power control.

Spurring these new efforts were Navy reports that captured German naval vessels had magnetic amplifier control systems that had

High-frequency radio enables a central dispatcher to keep track of all trucks which results in improved efficiency. H-f has a tremendous future in the shop



Electronic induction heating cut hardening costs 48 per cent in this application. Gravity carries shaft through quench ring which contains the induction coil

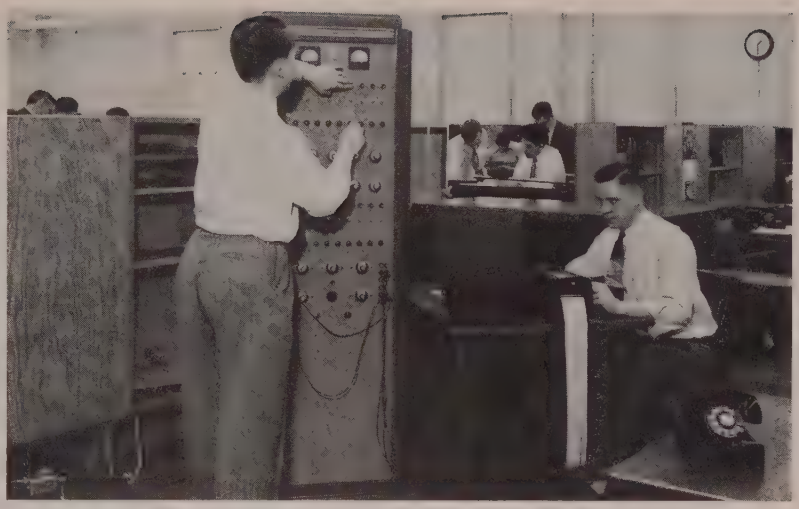
pparently functioned without aintenance since their installaion in the twenties. Evaluation of he equipment showed that its perormance was relatively poor; but he Navy felt that, with the adances that had been made in techology, the system could be imroved. New magnetic material for he self-saturable reactor cores roved to be the key. Magnetic mplifiers are showing signs of oving into the electronic and otating regulator markets with a tatic, low-maintenance device.

Expanding Nonetheless—Despite ube troubles and shortages of men killed in the art of changing elecronic theory into practical tools, he list of applications of elecronics in industry continues to row. Thousands of research peole have tackled the problem of omponent shortcomings, and aleady there are encouraging develpments coming out of the labs.

Chief among these are the much-ublicized germanium products: ectifiers, diodes and transistors. asic difference between these three the amount of impurities in the ermanium crystal, and its arangement. Perhaps not since the evelopment of the vacuum tube self has there been so much inerest generated in the electronics orld.

"Cat Whiskers" — Your crystal adio set of many years ago was ctually a semiconductor which reembles today's "whisker" diodes, ldest of the current germanium roducts. Germanium diodes are urrently replacing a tube in reent-model television sets and acording to reports are detecting adio signals more efficiently. ransistors, though, are the real lamour babies.

Mounted inside this bit of wire nd plastic is a tiny speck of almost pure germanium which haresses electrons in a way which ould only be duplicated in a vacum tube. Several thousand can be perated on the same power it akes to heat a single tube in your V set. They're shockproof, longved, and with more development ork, cheaper than the tubes they ill replace. Germanium rectifiers, ewest addition to the family, are eing touted as possible solution o a motor-mounted power con-



The much-glamorized electronic brains of a few years ago are solving everyday problems in industry today. They're saving critical time and manpower

version unit for d-c motors. They are at present, the most efficient rectifier in terms of power losses.

Impact on Industry—Most electronics producers see a 3 to 4 year period before the germanium family makes itself felt in industry. Even at that, there will still be many jobs that the little wonders won't be able to tackle. One of these is very high frequency applications . . . resistance welding, induction heating, electrolytic retinning, etc. Another field is in high-current rectification. There is little likelihood that anything will come along to replace the reliable ignitron tube. Photo-electric and x-ray tubes are also assured a future as is your TV picture tube.

Significantly, experts predict that transistors will actually boost tube growth. Reasoning is that widespread use of germanium products will lead to new products in which tubes will be used. Many tubes will be replaced in amplifying and control circuits, places where they are the most numerous in circuitry, and also where most of the tube trouble begins.

Still Growing — Industry's acceptance and interest in electronics, even before germanium publicity, was growing steadily. The war-born developments have further stimulated that growth. Industrial television, just scratching the surface of possible applications, is out of the gadget stage and ready to go to work on a big scale. Digital and analog computers, once thought to be tools of the giant corporation, are solving complex design and production problems in the medium and smaller sized plants. The transistorized circuit is a natural for this particular device, so industry looks forward to big growth potential here.

High frequency radio, popularized by the walkie-talkie, is opening new avenues of efficiency in plants. Best success to date is in streamlining materials handling and expediting systems through centralized dispatching of materials and equipment via radio. Number of yet untried applications is almost countless.

Testing and Measuring — Mass spectrometers or "electronic chemists" as they are called not only take constant readings of the materials flowing through a chamber, but can be made to adjust the mixture and hold it to a given composition. On the market are portable multi-channel oscillographs which can graph the interrelation of simultaneous occurrences on a machine or operation.

Add to these all of the myriad devices employing photo-electric tubes, x-ray gages, surface indicators and analysers, and all of the special-application electronic devices built and sold by the loft shop operators and the total becomes astronomical. What new developments in the art will mean to this phase of electronics is beyond the imagination of even the experts.

This conveyor type cold cleaner uses a power spray system (left) to remove oil, grease and dirt from previous machining operations and to provide a rust preventive for engine blocks at the Kaiser-Frazer engine division

Cold Cleaner Cuts Costs

New combination of alkali-solvent-wetting agent is effective in power washers at room temperature. Pays off particularly for light cleaning jobs with no incrusted oils

By D. C. MINER
E. F. Houghton & Co.
Philadelphia

A NEW production line cleaner that works at room temperature has more advantages for your plant than you may think.

This new combination of alkali-solvent-wetting agent does a good job in power washers without heating. Advantages: There are no heating costs and no need for stacks, vents, burners, and heat controls. No parts are too hot to handle when they come out of the cleaner. Complaints from workers because of hot steamy installations go by the board.

Saves Money Too—Plants using the new cold cleaner have chalked up real savings, too. A bearing manufacturer reports a savings of $12.21 per day for one washer which cleans bearings and races after heating and oil quenching. Parts are cool, making inspection and gaging after cleaning easy.

In a body plant where parts are washed prior to welding, a check on costs revealed a weekly saving of $139. A hot caustic soda solution was formerly used here. The change eliminated rapid rusting which had previously been a cause of trouble.

Here's the Start—Some months ago researchers at E. F. Houghton & Co. took stock of some of the undesirable points of conventional hot production line cleaners. They launched a project to develop a method and a cleaning compound which would be fast in action, yet usable at room temperature. Guiding light in this work was their belief that there should be a combination of solvent, wetting agent and alkali which would function when pumped forcibly on metal parts conveyed through a washer.

Result of this investigation was a cold cleaner composition, consisting of a balanced alkali combination which functions as a builder for the detergency, and an oily liquid combining fast wetting action, emulsification and rust inhibition.

Make Up—The new cleaner consists of two products: A powder and a liquid, branded Houghto-Clean 440 and 439. They are mixed with room temperature water in regular power washer without any need for heating. In preparing the cleaner the powder is added to the water in amount of 2 oz/gal. After it is dissolved, the liquid constituent is slowly added in two, ¼-oz/gal portions (to reduce foam), followed by thorough mixing.

This provides a cleaning solution that requires no heat. Action of the cleaner leaves an almost invisible film on the work that passivates the metal surface and inhibits temporarily against rusting. For example, cast iron cylinder blocks were washed and allowed to stand for three weeks before rust was visible. Brass and copper washed in the bath show no staining or corrosion.

Down to Fundamentals—Detergency, or the ability to clean a metal surface results from many factors. One important factor is low interfacial tension between the cleaning solution and the metal being cleaned.

This low interfacial tension enables the cleaning solution to undermine the dirt and to break it up into fine globules that can be lifted away from the surface. Other factors such as deflocculation, saponification and emulsification also play a part in cleaning action.

Synthetic detergent compounds are added to alkaline cleaners to decrease surface tension and interfacial tension against oil. They emulsify oil and suspend solid particles of dirt in the solution.

Two Methods — Production line cleaning is usually done by two principal methods: Mineral or organic solvents or in a hot alkaline bath. Both can be mechanized. There are also combinations of the two in washing machines where metal parts are given a solvent spray, an alkaline wash and a rinse.

Dodge crankshafts coming from the old cleaner unit are air-dried at room temperature before inspection

The cleaning procedure used depends to a large extent on the type of soil to be removed. In most cases this dirt consists of a processed oil for cutting or drawing, pigmented oil or soap-type drawing compound, a forging agent, quenching oil, mineral scale, smut or rust preventive.

The cleaning compound to be used depends on whether parts must be chemically clean, as they must for later plating or porcelain enameling, or whether the parts are to be given further processing or go into assemblies requiring only a physically clean rust proof surface.

Keep Requirements in Mind—A great majority of cleaning operations outside the plating shop are of the latter type, where the principal objectives are to remove soil and resist early rusting. Mechanical metal-part washers are well adapted to such applications.

Cleaning in a mechanical washer is made possible by a combination of mechanical and chemical action. In spray washing, the most common method, the force of the spray against the work gives a scrubbing action that aids in removing chips, dirt and other solids. Its cutting action speeds up emulsification and is effective in areas that in soak cleaning might act as traps for cleaning solution.

Longtime Standard — The hot alkaline bath, usually operated at 170 to 200° F is a longtime standard and efficient method of cleaning metal parts and assemblies. However, it has disadvantages, such as making parts too hot to handle, causing unwanted vapors and extra heat in the hot summer months, requiring steam or fuel lines for heating at extra cost, and leaving the metal surfaces subject to corrosion immediately after cleaning. In air conditioned plants the hot baths throw an extra load on the cooling equipment both by heat and moisture released.

Look at Heating Costs—Cost of heating cleaning baths is not inconsiderable. It is well appreciated by concerns who watch every penny of processing expense. One estimate has been made that it costs on the average $1.25 to heat 500 gallons of cleaner solution for 8 hours. This can run into three figures in a sizeable washer in a week's time.

Savings in steam, gas or oil for heating have been found to run as high as $100 per week per washer in some installations where the cold cleaner is being used. Steam lines, vents, stacks, and condensers can be eliminated in planning new installations. This resulted in a saving of over $700 in one plant where a power washer was being installed.

May Expand—Houghton cleaner specialists, who developed the cold cleaner composition, feel that with pump agitation it may also be adapted to some types of still-tank cleaning. However, to date sufficient experience has not been accumulated to advocate it for other than power washers.

Some users of the new cleaner find it advantageous to provide a hot blast at the end of the cleaning cycle. The preferred cycle to use in cleaning depends on the shape of the part, amount of soil on the parts, and the type of washer being employed.

On the average, a period of 1 to 1½ minutes in the spray should be sufficient. In a two-stage washer no rinse is needed, but the cold cleaner is employed in both stages. A pump pressure of 25 to 30 psi is used. Careful arrangement of the jets is recommended, along with weekly inspection and cleaning.

How to Control—A simple alkali titration of the cleaner bath is the basis for its control. Here are the directions: Measure in graduate 35 cc of the cleaning solution to be tested, and add 2 drops of 1 per cent phenolphthalein solution. If one 5-grain aspirin tablet entirely destroys pink color, solution is less than 1 oz/gal. If color faintly persists, concentration is exactly 1 oz/gal. If two tablets are necessary to reach endpoint, concentration is 2 oz/gal.

To compensate for drag-out losses, additions to the cleaner bath should be made in the ratio of 2-ounce of powder and ½-ounce of liquid per gallon of water.

HERE'S HOW ONE CONCERN FIGURED CLEANER COSTS AFTER SWITCHING FROM HOT CAUSTIC TO COLD CLEANER FOR PARTS PRIOR TO WELDING

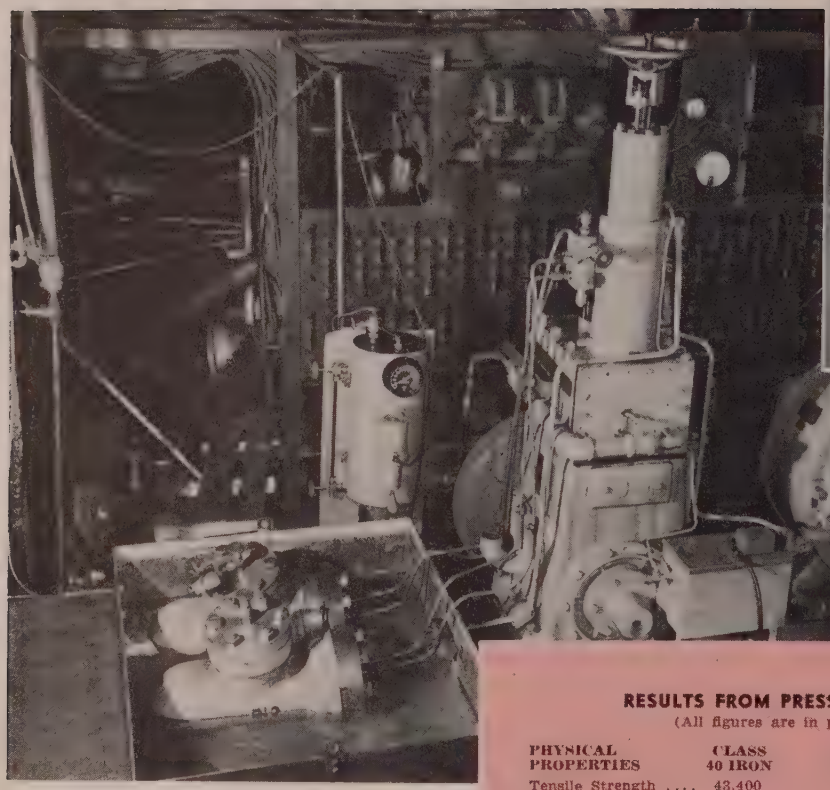
HOT CAUSTIC CLEANER

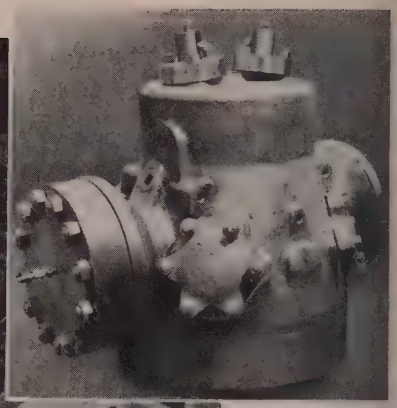
	PER MO.
Summer operation for fuel oil, 30 gallons per hour for 40 hours per week (may be higher in winter)	$516.00
Caustic soda 100 lb per week	20.00
Oven operator 9½ hour per day 47½ hours per week	382.00
Three men to clean oven on Saturday, 36 hours per week	288.00
Cost to haul away one load of waste oil per week	120.00
Total cost per month	$1326.00

Does not include cost of burner maintenance or maintenance and operating costs of ventilating fans.

COLD CLEANER

	PER MO.
Cost of powder and liquid to make up cleaner	$170.00
Operator, 40 hours per week (Does not require early start or paid lunch)	320.00
Saturday, one man to clean nozzles 12 hours every two weeks	48.00
Saturday, three men to clean washer, 36 hours every two weeks	144.00
Hauling three loads waste oil every two weeks	76.00
Total cost per month	$758.00





Pressure fatigue machine developed by Cooper-Bessemer for testing the relative strength of nodular iron in relation to other materials. Table gives results of testing program

RESULTS FROM PRESSURE VESSEL RESEARCH

(All figures are in pounds per square inch)

PHYSICAL PROPERTIES	CLASS 40 IRON	CLASS 60 IRON	NODULAR IRON (Heat Treated)	CAST STEEL
Tensile Strength	43,400	67,750	61,750	71,750
Endurance Limit (Rotating Beam)	16,000	24,500	21,750*	26,000
Bursting Pressure	7250	8250	14,750	16,200
Pressure Fatigue Limit	1400	2350	3100	3350

*The average rotating beam endurance limit of 21,750 psi recorded above is low in relation to subsequent values recorded. Fatigue specimens cut from compressor cylinder body C88-14A cast in February last year gave a value of 34,000 psi. A specimen cut from a JS generator shaft cast in June last year gave a value of 32,500 psi.

Nodular Iron Tackles Big Jobs

Spheroidal graphite cast iron is used for large intricately cored castings at Cooper-Bessemer. Excellent castability plus high yield point pay off. Laboratory tests check each heat

DUCTILE IRON has been on the market now for about four years—long enough for an evaluation of its merits under actual service conditions. Results point to the fact that it is a good engineering material which will take its place with the other cast ferrous materials.

This is the appraisal made recently by T. E. Eagan, research metallurgist, Cooper-Bessemer Corp.—the first licensee of International Nickel Co. for nodular iron. Eagan told a meeting of the American Society for Metals in Cleveland that his company turned out some 900 tons of nodular iron castings last year.

Large Parts—Most of the castings in which the company is interested are large and have rather heavy sections. Experimental work on nodular iron is pointed to development of the material for use in compressors, diesel and gas engines.

Ductile cast iron, because of its castability, which has been found to be as good as gray iron, seemed the logical choice for a number of these compressor parts. Before using it, however, it was necessary to study the material from all angles.

Control Needed—Foundry experience proves that with cupola iron, it is practical to produce iron with the graphite in spheroidal form. But a word of caution: Iron should

e melted with close control and he ladle additions of the magnesum alloy should be carefully calulated and added in specified ways o obtain the best results.

The nickel - silicon - magnesium ype alloy has given best results t Cooper-Bessemer. The alloy is laced in the bottom of the ladle nd then the metal is added on op of it.

Not all heats made have been 100 er cent spheroidal graphite. Some ave been full flake graphite and thers have been a mixture of pheroidal and flake especially in he heavier sections. The company's xperience is that large castings vith 100 per cent nodular graphite re a rarity instead of the ordinary hing. Changeover from flake to pheroidal graphite is generally radual; there is no sharp demarcation area.

Set Standard—Practice is to keep bove 85 per cent nodular graphite n the structure for all operating arts. This type cast iron exhibits true stress-strain curve, gives a igh constant modulus of 25 million psi, with fatigue resistance omparable to that of the ordinary rades of steel.

Since nodular iron is a new maerial, continuous foundry research s conducted to improve its quality nd reduce its cost of manufacture. Meanwhile, the minimum physical roperties that are required to nake it suitable for production arts are known. Laboratory deerminations are made on test bars rom every ladle of iron to be oured and no castings are released or production unless these minimum standards have been met or exceeded.

Control over the metal has been ather well established. Heat after eat is now being made which conforms to the desired physical properties.

Added Insurance—Use of small quantities of cerium to overcome the influence of subversive elements promises to become very important in that it will allow the use of pig irons previously tabooed because of high titanium. Cerium added in quantities of 0.002-0.003 per cent may turn out to be what is needed to insure reproducibility by taking care of impurities and residuals in melts.

A number of specifications have now been issued covering nodular iron. ASTM A339-51T is a standard that can be effectively used.

What About Copper — Small amounts of copper improve the strength of nodular iron in the as-cast condition, raise hardness and reduce elongation. Depending on end applications this may be either an advantage or disadvantage.

To foundries looking toward meeting a minimum elongation requirement of 5 per cent in the as-cast condition, which is usual, or in supplying castings with optimum machining properties, the presence of copper is undesirable.

Other Side of Picture — In some applications ductility is of no great importance. The increase in strength and wear resistance may be worth the sacrifice in machinability. Here a small amount of copper gives a large return in improved properties.

The effect of copper can be minimized by annealing. Annealing temperatures are not influenced by copper, but time at temperature is increased. Properties of annealed castings are what would be expected of copper-free ductile irons with a fully annealed ferritic microstructure.

Looks Good — Extensive tests

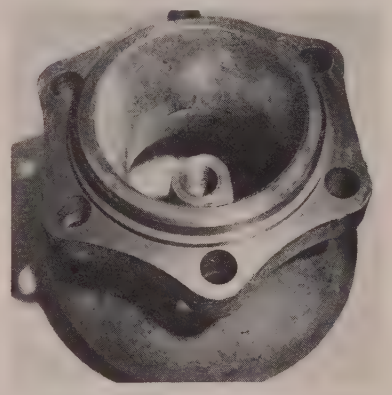
TABLE I

Analysis Of Nodular Iron Heats

Total carbon	3.4 - 3.8 per cent
Silicon	2.4 - 3.0
Manganese	pref. below 0.40 per cent
Phosphorus	below 0.10 or as low as possible
Sulphur	0.01 per cent
Nickel	0.50 - 2.0 dep. on alloy
Copper	not desired but because of alloy used generally 0.15—0.75 per cent
Magnesium	0.04 - 0.10 usually 0.06 - 0.08 pref.

Weight Casting ..... 2540 lb
Heat Treatment ..... Annealed
Thickness of Sampled Section ..... 1⅞ in.

T.S. psi	Y.P. psi	Elong. %	Brinell Hardness
72,200	62,600	3	179

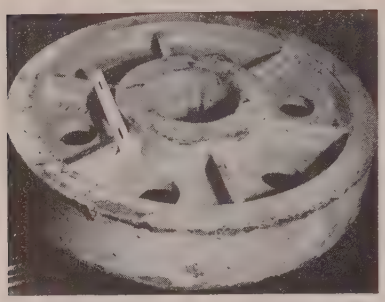


Weight Casting ..... 120 lb
Heat Treatment ..... Annealed
Thickness of Sampled Section ..... 1¼ in.

T.S. psi	Y.P. psi	Elong. %	Red. of Area %	Brinell Hardness
66,000	51,100	10	13	160

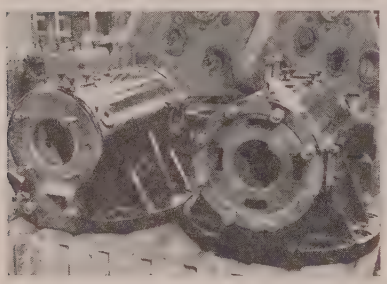
Weight Casting ..... 2400 lb
Heat Treatment ..... Annealed
Thickness of Sampled Section ..... 1¾ in.

T.S. psi	Y.P. psi	Elong. %	Brinell Hardness
76,200	58,300	5	179



Weight Casting ..... 585 lb
Heat Treatment ..... Partial Annealed
Thickness of Sampled Section ..... 2⅝ in.

T.S. psi	Y.P. psi	Elong. %	Red. of Area %	Brinell Hardness
73,750	64,000	6.0	3.6	196



Weight of Casting ..... 1020 lb
Heat Treatment ..... Annealed
Thickness of Sampled Section ..... 1½ in.

T.S. psi	Y.P. psi	Elong. %	Brinell Hardness
85,000	57,900	16	179

Weight Casting ..... 1400 lb
Heat Treatment ..... As-Cast
Thickness of Sampled Section ..... 5½ in.

T.S. psi	Y.P. psi	Elong. %	Red. of Area %	Brinell Hardness
85,200	....	0	0	285

Weight Casting .....85 lb rough casting
Heat Treatment ..... Annealed
Thickness of Sampled Section ..... ¾ in.

T.S. psi	Y.P. psi	Elong. %	Brinell Hardness
65,000	53,100	9.6	172

TABLE II
Physical Properties Of Nodular Iron

Av. 225 Cooper-Bessemer heats.
3-inch Y Block-Heat treated

Tensile strength ..... 53,900 - 83,900 psi
Yield strength ..... 43,300 - 63,800 psi
Elongation ..... 4.5 - 25 per cent

indicate fatigue resistance is comparable to that of the ordinary grades of steel both in the notched and unnotched condition. This property in combination with its wear resistance and relatively high, constant modulus of 25 million psi makes it an ideal material for crankshafts, generator shafts, connecting rods, camshafts and many other types of equipment subject to alternating stresses and bearing wear.

Many parts require a good combination of both reasonable yield strength and moderate shock resistance. Because of favorable properties here ductile iron is finding use in clutch plates for heavy duty tractors, and other agricultural implement parts such as hitches, brackets, front axles for tractors, gear housings, gears and many other items.

Pistons Stand Pressure Test—The mechanical properties of nodular iron indicate that it has a considerably higher yield point than most of the foundry alloys, excepting high-strength steels. This is the most important feature determining load carrying ability and is of interest to design engineers who usually base their designs on yield strength. Nodular iron shows up good in this respect. It has shown up well for use as a piston material.

It promises to be quite an asset in cylinder heads, pistons, and liners in connection with the development of high output engines. A lot of 12 pistons weighing about 85 pounds each were cast in Cooper-Bessemer foundry. One of the pistons was subjected to pressure test but the test was abandoned after a pressure of 18,000 psi failed to crack the piston crown. Two pistons are now in locomotive service to test wearing qualities.

Wear Resistance—In a number of tests ductile iron has shown good resistance to mechanical wear in both lubricated and unlubricated condition. A number of parts such as cams, gears, sprockets and bearings are now being made of it. Parts can be readily flame or induction hardened to 550-600 Brinell.

Use of nodular iron in engine parts is increasing regularly. It has passed rigid tests for large crankshafts and is now being used for smaller engine crankshafts. No serious failures have shown up for compressor bodies and heads that have been in service for sufficiently long time to show up such deficiencies.

Heat Resistance Up—Excellent growth resistance of nodular iron and relatively good scale resistance is showing up in its use for furnace doors and ingot molds. It is also being used in such items as tuyeres, blast furnace parts, oil burner castings, grates, annealing boxes and large pots. It has better scale resistance than straight carbon steel or gray iron.

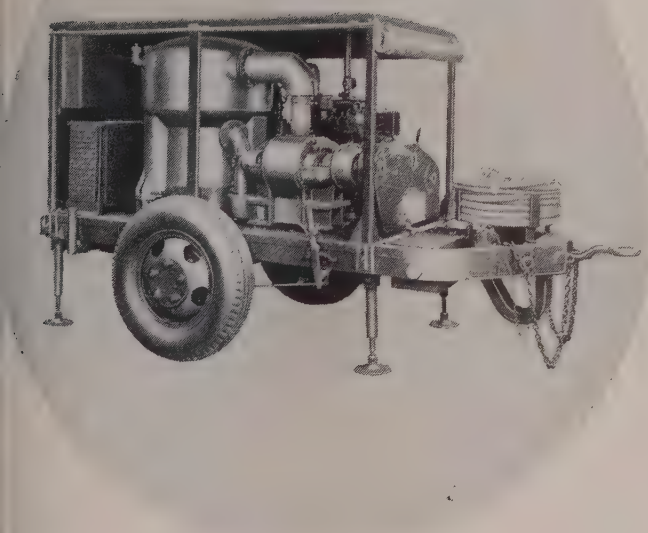
Firm Expands Nylon Line

Recognized for wear resistance, toughness and strength, nylon rod is being used in several industrial plants for machinery and maintenance purposes. Polymer Corp., Reading, Pa., reports it is fabricating nylon into gaskets, bushings, bearings, screws, gears, valve seats, rollers and other machine and equipment parts.

The firm says light weight, abrasion resistance, operating quietness and corrosion resistance are strong points of its product's performance on these jobs. Another advantage is short time resistance to high temperatures such as those encountered in welding.

The nylon formulation most often supplied by Polymer for machining operations is grade FM-10001. When used for bearings, gears, thrust washers and other moving parts, it functions continuously over long periods with little or no lubrication. Result is reduced wear and maintenance.

FRESH WATER FROM THE SEA ...?



Portable Diesel-driven sea-water compression still, producing 85 gallons of pure water per hour. Made by Cleaver-Brooks Company, Special Products Division, Waukesha, Wis., which also makes stationary installations for chemical, paper, pharmaceutical and similar plants, for production of pure water or recovery of valuable by-products.

USE REVERE METALS!

This is a portable compression still, which produces pure distilled water from the sea at the rate of 85 gallons per hour. It is made by Cleaver-Brooks Company, Special Products Division, Waukesha, Wis., an important producer of stills, either portable or stationary, for the Armed Forces and for industry. An important feature of Cleaver-Brooks design is the selection of metals in accordance with the water conditions to be met, whether salt, brackish, contaminated, or requiring recovery of valuable by-products. Thus, for example, the heat exchanger, of the tube-within-a-tube type may have cupro-nickel tubes and headers, or Admiralty tubes, naval brass, silicon bronze, according to the nature of the service. Such care in selection of metals is in part at least responsible for the high reputation Cleaver-Brooks enjoys.

In addition to supplying Revere Metals, we were also requested to collaborate with engineers and production men on fabrication methods, including forming, brazing, welding and annealing. Cleaver-Brooks is a large and well-staffed company, and its experience is such that it is capable of conducting its operations unassisted. However, like so many companies, it likes to have others double-check its conclusions and methods, to protect itself and its customers. The Revere Technical Advisory Staff was glad to respond to the call.

Such work is typical of the collaboration Revere offers to you through its salesmen, its Technical Advisors, and the Research Department. Remember, we do not take the place of your own engineers, designers and production people; we consult with them, and make our knowledge freely available, on a confidential basis, of course. Call the nearest Revere Sales Office. Consult your telephone book or write direct.

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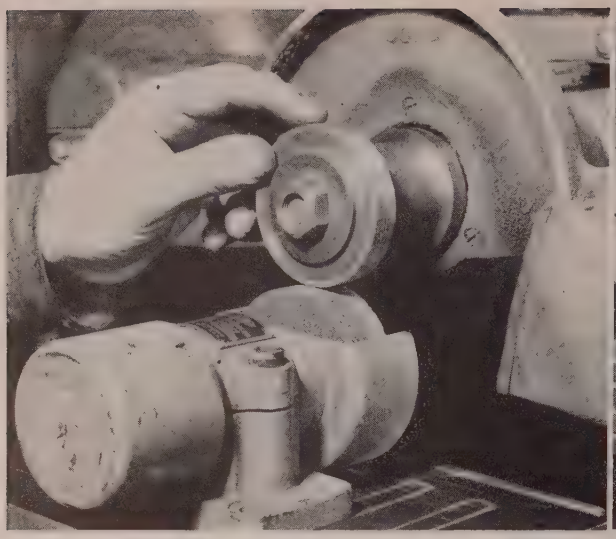
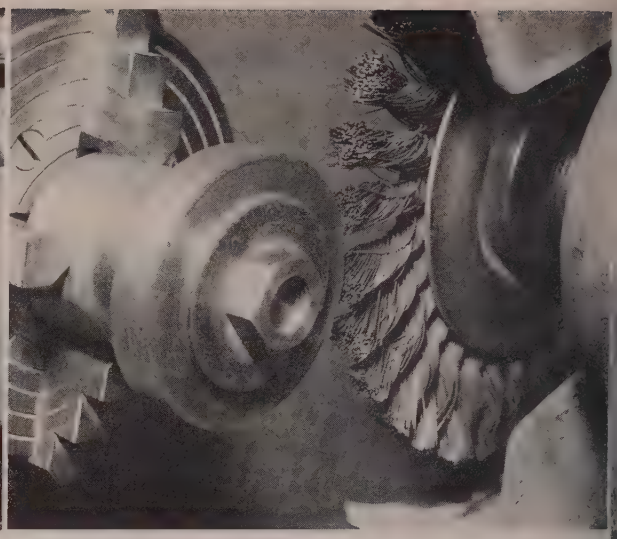


Two wheels pancaked together are trued at same time. When parting line between them is no longer visible, operator judges truing operation to be complete



Wheels are dressed by Osborn brushes. They remove some matrix leaving diamonds sticking up for improved cutting action. Brush and wheel both rotate at 3600 rpm

Brushing Sharpens Worn Diamond Wheels

Grinding wheel restores the cutting face and rotary wire brushing removes brass matrix, thus exposing more diamonds for better cutting. Wheel life is lengthened

ADDED LIFE and increased cuting action from their diamond wheels is the result of a new wheel truing and dressing techinque worked out by S. K. Wellman Co. engineers in collaboration with Osborn Mfg. Co., both of Cleveland.

Before and after shot of diamond wheels shows scored and crowned conditions at left, trued and dressed wheels at right. Cutting action has increased 80 per cent in process

The method utilizes a wire brush to remove some of the brass matrix, leaving the industrial diamonds sticking up for better cutting action. Since present demand for diamonds exceeds supply, it is important that each diamond wheel be used in the most efficient manner to obtain maximum output.

Wheels Wear Down—In service, the wheels wear down to a crown shape and must be squared up, or trued and dressed. Truing is the process of restoring the cutting face of a wheel to running true. Dressing is done for the purpose of improving the wheels' cutting action. Dressing the wheel is primarily a cleaning or resharpening operation by removing any load, or minute amount of bond between the diamond particles. This job is done by the Osborn wire wheel brushes.

The diamond wheeels are used at Wellman to cut grooves in silicon alloy material used for Wellman Velvetouch clutch plates. Various sizes are used: 3-inch diameter, ⅛ and ¼-inch thick; and 8-inch diameter, ⅛ and ¼-inch thick. To the outer rim is bonded ⅛ or ¼-inch thickness of industrial diamonds in brass matrix.

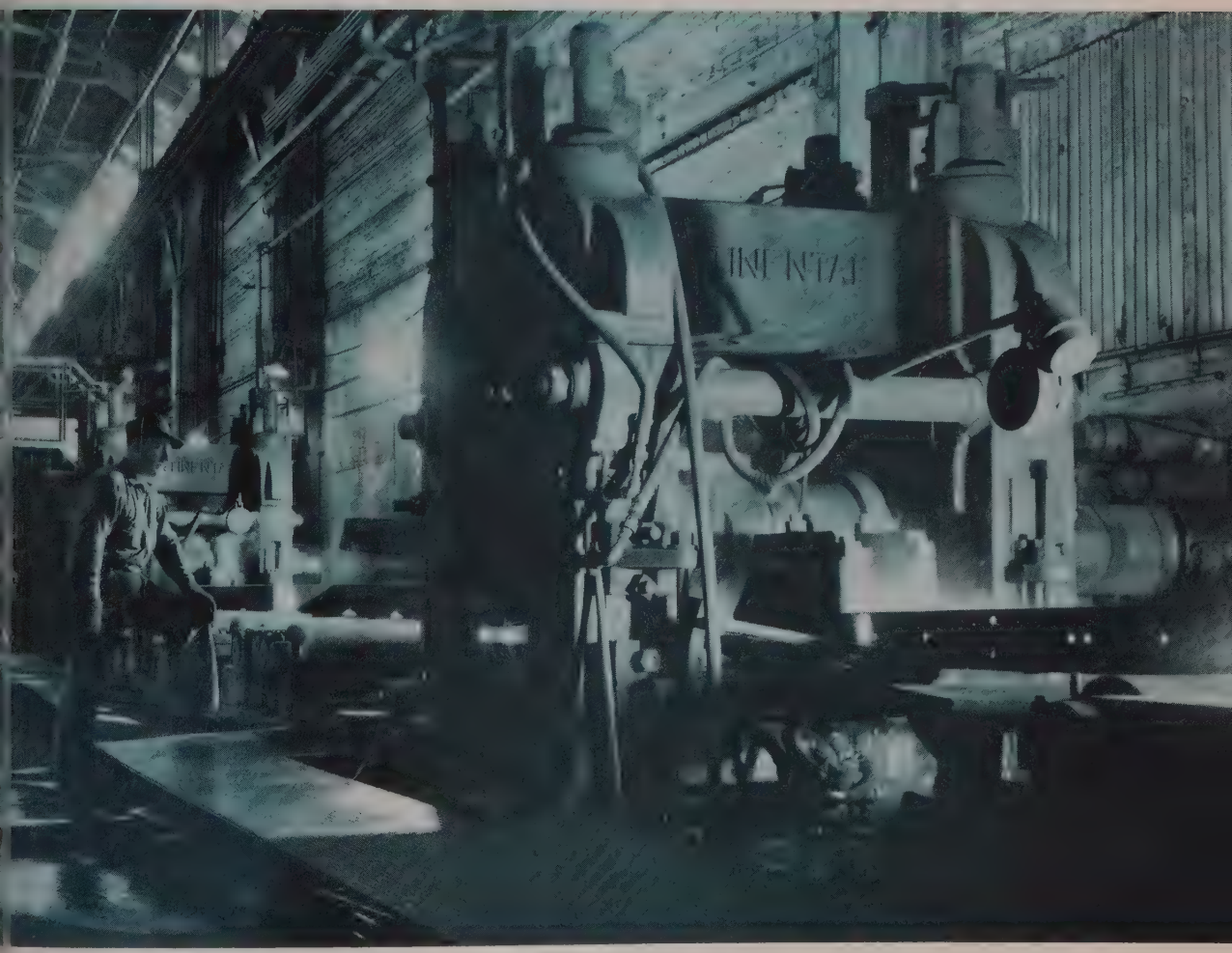
Grinding First—In truing or squaring up the diamond wheels, a brake controlled truing device is used. Two wheels are trued at the same time. They are pancaked together in a Delta Toolmaker held on a magnetic chuck. While the diamond wheels rotate, the rotating grinding wheel is passed back and forth across their face.

As long as 30 minutes of grinding is done, with approximately 1/32 of the diamond wheel taken off, depending on the amount of truing necessary. When the surface of both diamond wheels is uniform and there is no visible parting line between the two wheels, the operator estimates that the wheels are squared up.

Dressing the wheels is done by an 8-inch Osborn wire brush. Both the brush and the diamond wheels rotate at 3600 revolutions per minute. The object here is to remove some of the brass matrix, leaving the diamonds sticking up for bettter cutting action.

CONTINENTAL

CONTINUOUS BILLET and BAR MILL



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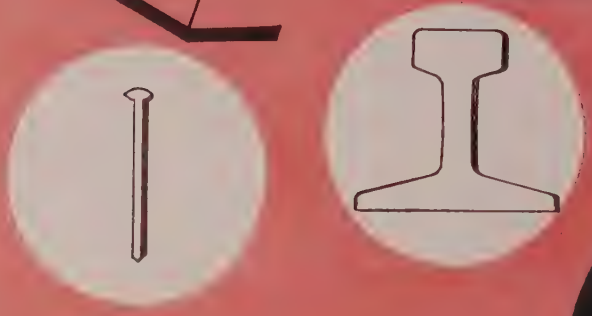

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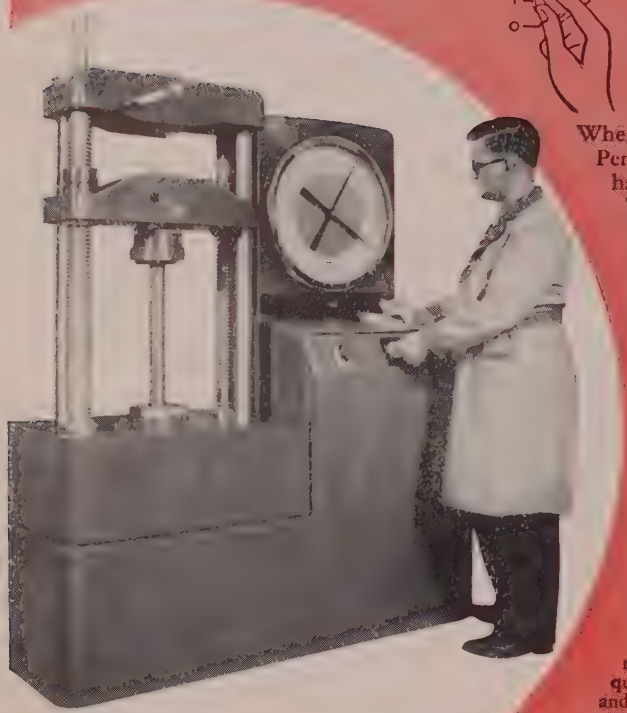
RIEHLE UNIVERSAL TESTING MACHINE



Compression test in progress on Riehle 60,000 lb. Hydraulic Universal. Photo courtesy of Bundy Tubing Company, Detroit.

When you install a Riehle Pendomatic Universal Testing Machine, it's just like having 5 testing machines at your disposal. That's because every Riehle Pendomatic Universal has 5 scale ranges as standard equipment. All you do is turn the selector knob to the proper range, then conduct the test. No accessories are needed. Guaranteed accuracy is within ½ of 1%.

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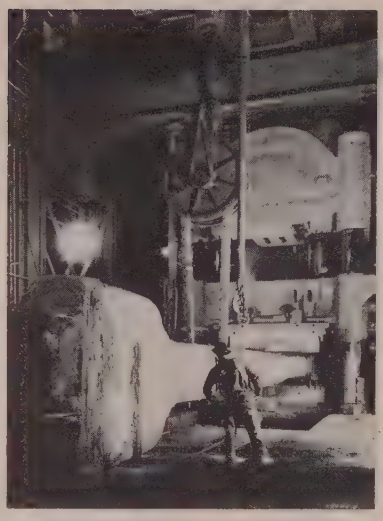
EAST MOLINE, ILLINOIS

"ONE TEST IS WORTH A THOUSAND EXPERT OPINIONS"

A crane has just hoisted the 275-ton ingot from its mold at the Bethlehem plant. A specially-rigged railroad car conveyed the ingot to forge shop



Fourth forging heat under press: The column section has grown to 70 feet. Press here is reducing the main body to approximately 44 inches wide

Monster Column Takes Shape for Press Section

Ingot weighing 275 tons is hammered into a 145-ton, 110-foot-long forging. The column required a series of five individual heatings and forging operations

NE OF 18 rectangular column ections for a 50,000-ton die forg-ng press is seen above in two steps n its course from ingot to com-leted section at Bethlehem Steel o., Bethlehem, Pa.

Loewy Construction Co., New ork, will build the press for even-ual airframe component produc-ion in the Air Force heavy press rogram. It will have six columns, ach composed of three of these 10-foot long, 145-ton forgings.

When assembled at North Graf-on, Mass., next year the press will e equal in height to a 10-story uilding. This will make it one of he aircraft industry's largest resses of this type design.

Five Heatings—The steel com-any began with a round corru-ated ingot weighing 275 tons. hey completed forging the column ection after a series of five indi-idual heatings and forging opera-ions under a 7500-ton press. Final hape roughly resembles that of 110-foot dumbwaiter. Main body idth is 44 inches, swelling to a aximum 100-inch width at the nds. The section is 16 inches hick throughout.

To avoid as many production hazards as possible, the company forged in advance two scale models one-fifth the column's dimensions. Even this project could not anticipate all the difficulties to be faced in handling a 110-foot member in an 80-foot forge shop bay.

Special Handling — Two cranes rated 200 and 125 tons capacity comprised special handling equipment to carry the forging from the heating furnace to the forge when it had elongated 40 or 50 feet. Plastic condition of the steel at 2300°F forging temperature meant it would easily bend of its own weight if not supported properly throughout its length. Handling equipment provided for an arrangement of supports at regular intervals, designed and manufactured by the company, that succeeded in equal load distribution.

When forging elongation extended beyond length of the 37-foot heating furnace, only one end was heated to forging temperature and worked at a time. Specially designed hoods were used to retain as much temperature as possible in the section outside the furnace. In preparing for the fifth heat, the forging extended across the main shop bay and well into an unfired furnace directly opposite the heating furnace.

One-Week Heat Treat — After forging, the column section got a one-week heat treatment in a special furnace 120 feet long, designed and built for this job.

A set of three railroad cars was rigged to transport the forging to another plant section for straightening in a 6500-ton press. Temperature for straightening and annealing to relieve any stress set up in the straightening process was produced in another 120-foot long furnace—also specially built for the purpose.

Production Facilities Detailed

A brochure, "Production Through Research," has been published by Rheem Mfg. Co. to acquaint the aircraft industry with its research, development and production facilities. Included in the editorial content are descriptions of the company's works at Whittier and Downey, Calif., plus pictures of the way it has geared its production and development program to defense items with high mass production potential.

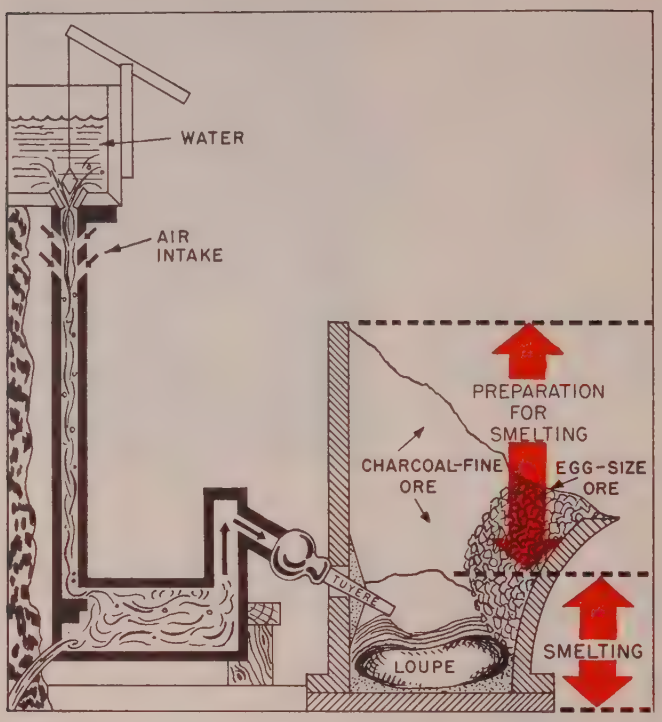


Fig. 1—Catalan forge used for ironmaking in 14th century

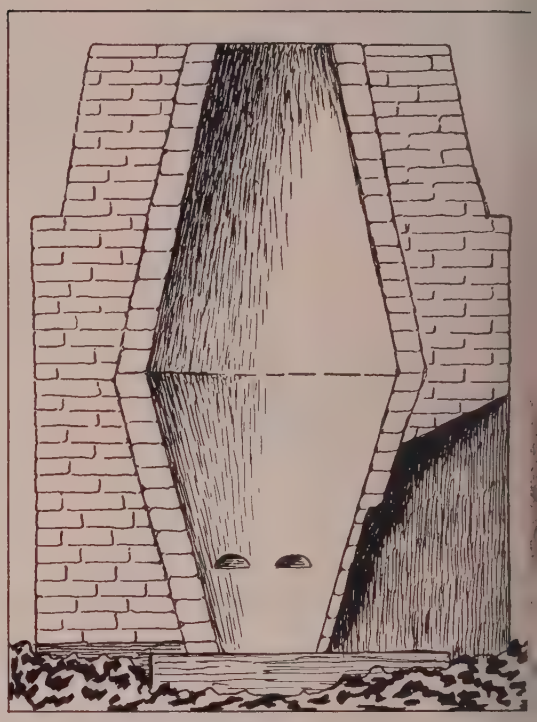


Fig. 2—Old German Stuckofen or high furnace

Don't Write Off the Blast Furnace

United Nations report advocating use of a low furnace and oxygen-enriched air for smelting iron ores raises many questions in the light of production economy

By CHARLES E. AGNEW
Consultant
Blast Furnace and Sintering Plant Operation
Cleveland

Part I

OPINION expressed in a United Nations report[1] that the blast furnace has become obsolete as the most economical and satisfactory means for smelting iron ore, and that eventually it must be replaced with a furnace of different design, has been widely circulated and discussed.

To a limited degree like opinion has developed in United States as the change in thermal requirements for smelting some classes of beneficiated raw materials, compared to like requirements for natural materials, is becoming more generally recognized.

Similar views regarding obsolescence of the blast furnace have been advanced from time to time with periodic revival of the belief that means can be developed for producing sponge iron economically with a low-temperature reducing operation, and so obviate the need for the blast furnace. Since not any of these past predictions have been substantiated commercially it is logical to conclude that the recommendation and opinion expressed in the United Nations technical report should be received with reservations.

A modern blast furnace plant is a marvel of, (1) mechanical efficiency for economical handling of raw materials and finished product, (2) ability to effectively utiliz its by-products, and (3) ability t produce an iron product havin exacting chemical composition spe cifications which are best suited t the needs of subsequent associate operations which consume it. Thes advantages must never be sacr ficed in order to serve some othe ulterior purpose. Where chemica and physical properties of raw ma terials cause differences in opera ing conditions and requirement the differences should be met by ac justing the operating practice tech nique rather than by altering th design of the furnace or the fu nace plant.

Recommends Use of Oxygen—The United Nations technical re port stresses the urgent need fo developing the use of oxygen i

[1]Technical report on "Possibilities of Development in the Production of Iron" prepared for the United Nations Economic Commission for Europe, Geneva, July 1952, by Prof. Robert Durrer, Zurich Polytechnic and director of the Louis de Roll and Steel Works, Switzerland. An abstract of Prof. Durrer's article was presented in the Sept. 22, 1952 issue of STEEL, page 172.

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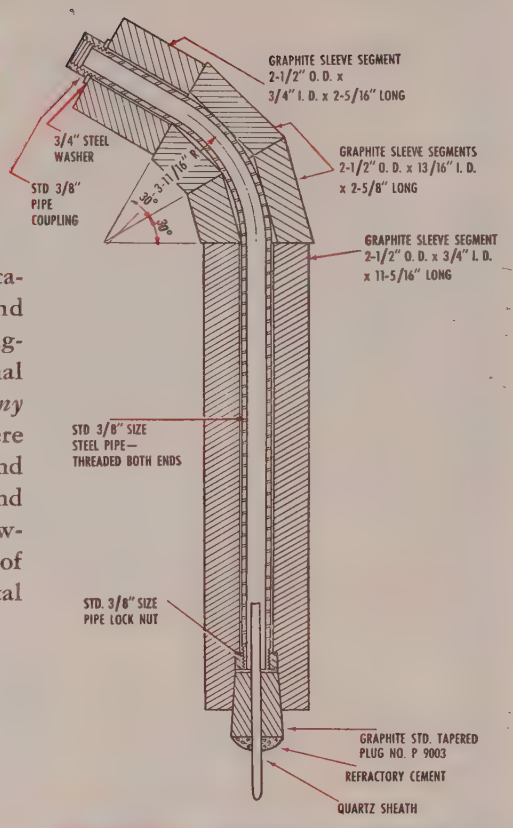
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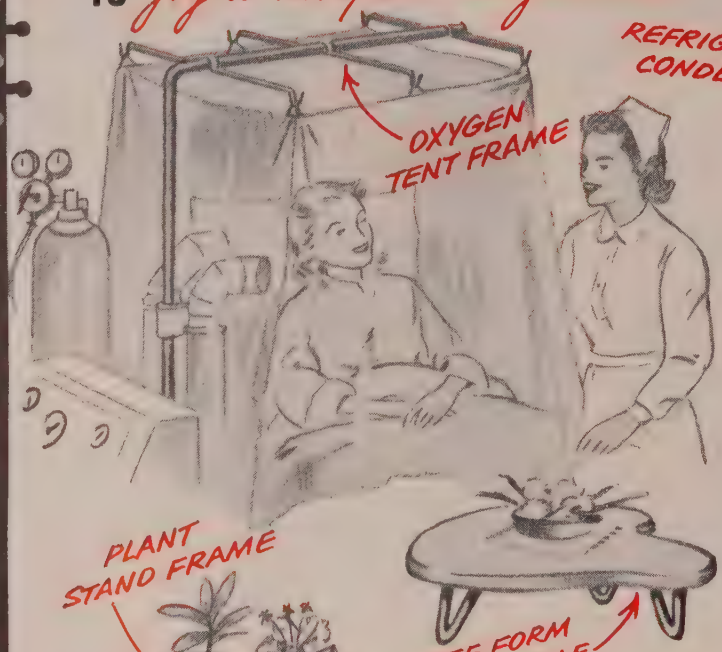
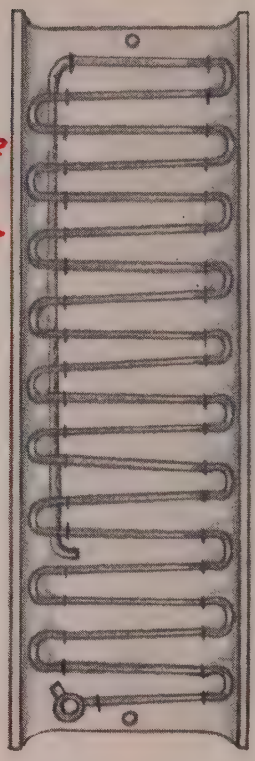


REFRIGERATOR CONDENSER



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Machines easily
Takes plastic coating
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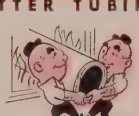
continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .

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he production of both iron and teel—as a solution for an eco- omic problem. The recommenda- ion is commendable but using op- rating economy as a premise em- hasizes the importance of a clear nderstanding of operating prin- iples involved in order to avoid vasteful expenditure of capital in iseless or questionable experimen- ation. The report has this to say n regard to the use of oxygen in last furnace operation:

1. The present high charge fur- aces are "quite unsuited for the eduction of ores with oxygen", and

2. "The process for reduction vith oxygen in low-shaft furnaces, *vhich have been proved in prin- iple,* should be worked out with- ut delay."

Comment No. 1 probably is based n the fact that to date no pro- lounced success has accompanied ttempts which have been made to se oxygen-enriched blast; at least o pronounced success has been ublicized.

Italics in comment No. 2 are the vriter's and are prompted by the uestion—what constitutes proof? Since a furnace of the proposed ow-shaft design has not yet been uilt there cannot have been a prac- ical demonstration or proof of the principle. Conception of a theory may be presented with logic, which appears to be conclusive, but cor- rectness of the logic and proof of the theory must be demonstrat- ed with practical application.

During past years many process theories for producing sponge iron have been conceived. During World War II a few sponge iron plants representing substantial capital in- vestments were built in the United States, and were operated for suf- ficient length of time to give their designers ample opportunity to prove the worth of their claims for these plants.

Ability to produce a product with the process theories advanced was proved, but the cost of producing it also proved the processes were not commercially competitive with a blast furnace. No doubt was left in the mind of management con- cerned with production economy concerning the feasibility of sponge iron processes replacing the blast furnace. These World War II sponge iron plants have been dismantled.

Purpose of Citation — Sponge iron processes have been cited be-

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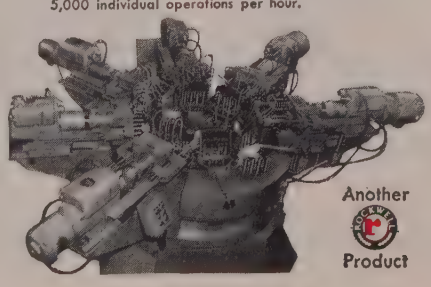

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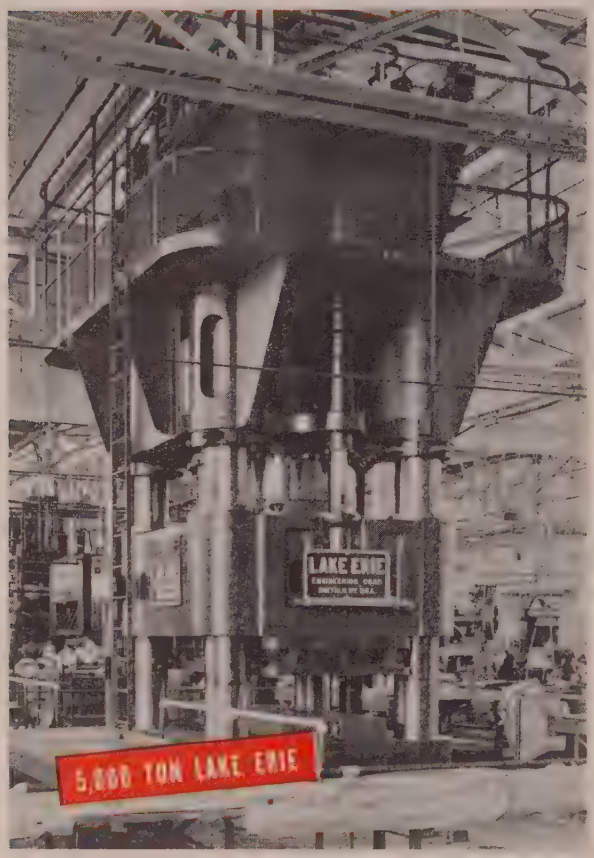
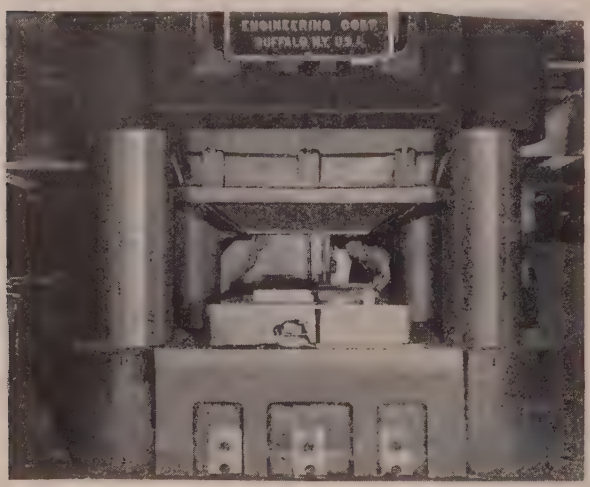
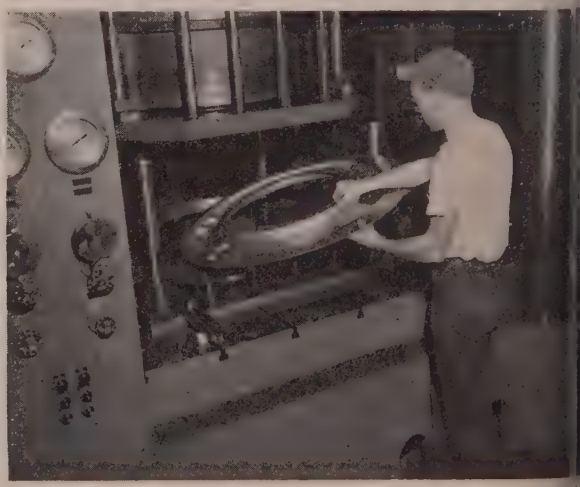


THE "BIG" PRESS AT CHANCE VOUGHT is a 5,000 ton Lake Erie fitted with a rubber pad. Press is shown forming four parts in a single operation. Two are for Chance Vought's F7U Cutlass fighter and two are for a Lockheed subcontract. Material used is 24 S O Aluminum of .051 gauge.

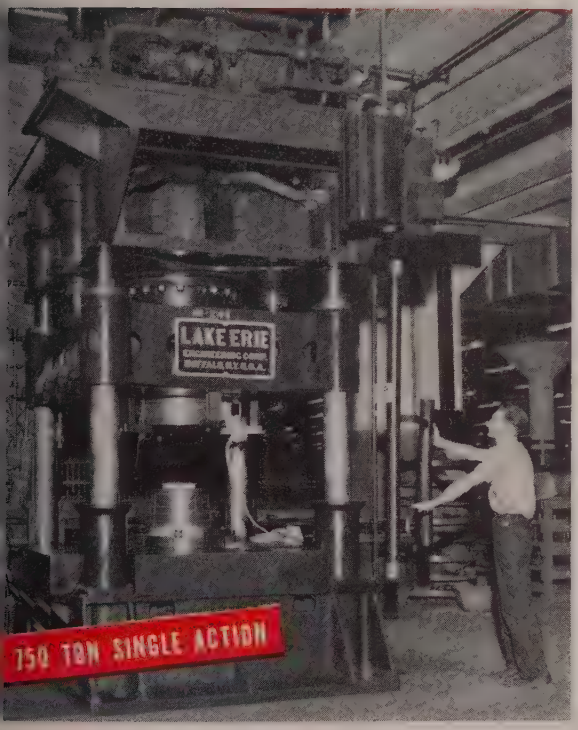
CHANCE VOUGHT'S 1,000 TON LAKE ERIE is shown forming a jet oil tank part under a contract with Pratt & Whitney Aircraft Company. The parts are formed from Aluminum. Lake Erie presses produce hundreds of different parts for Chance Vought.





Over 75% of all U.S. aircraft manufacturers utilize Lake Erie equipment

a Leading Part in the production of Chance Vought Aircraft



THIS 750 TON PRESS illustrates the versatility of Lake Erie hydraulic equipment. It is being used in this instance for an experimental setup employing very high forming pressures. The wires are connected to electrical strain gauges to insure that the S O Aluminum is not overstressed.

- **Wide-variety of parts for famous Corsair and Cutlass fighters, and for subcontractors, is produced on Lake Erie Equipment.**

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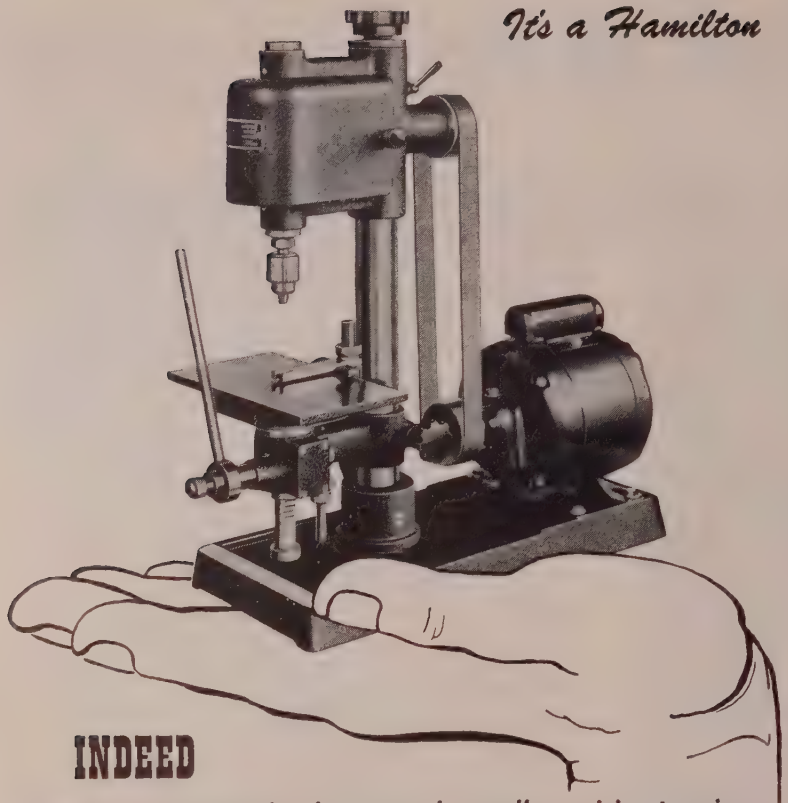

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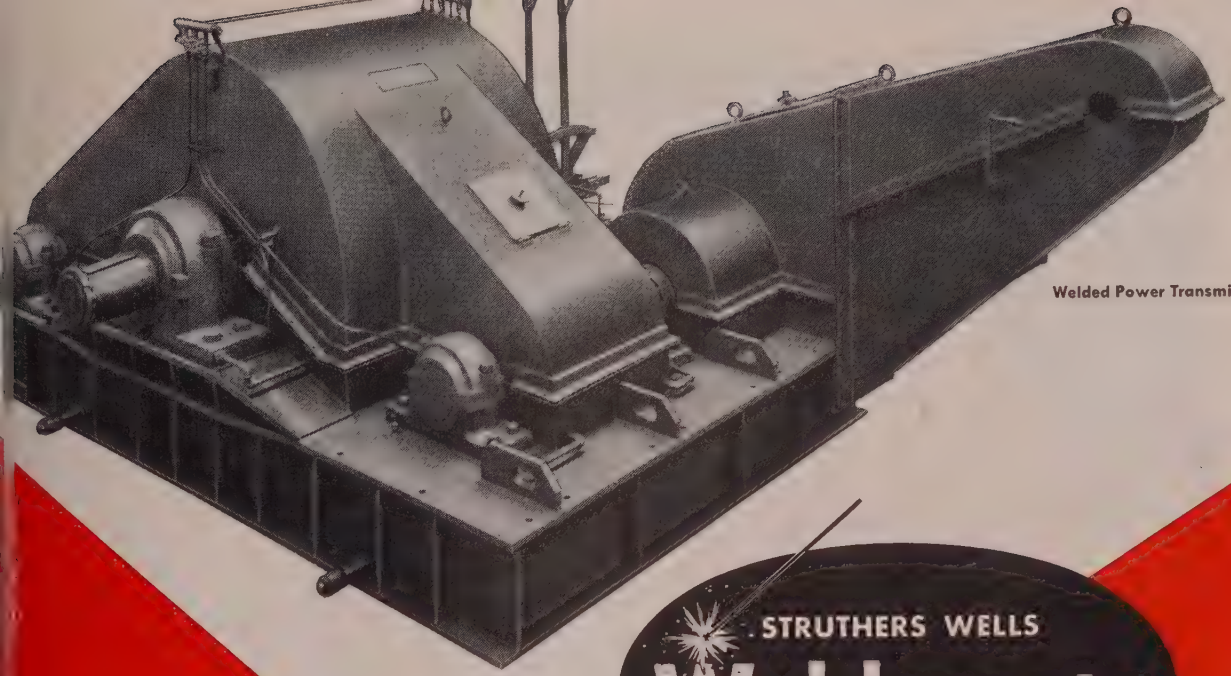
cause practical application of their theories demonstrated their failure was more in the commercial than in the technical phase of operation. Considering the technical principles involved it is reasonable to say the claim made in the United Nations technical report, that reduction of iron with the use of oxygen is practical with a low-shaft blast furnace but impractical with a high-shaft furnace, is open to question in the technical phase. The question is based upon proved principles of blast furnace operation, with emphasis being placed upon distinction between:

1. The heat volume (Btu) requirements and temperature requirements (Btu concentration) for furnace operation, and
2. The relationship between the capacity of the furnace shaft to prepare raw materials for smelting and the capacity of the bosh and hearth to smelt the prepared materials.

It is not intended to imply that it is forever impossible to develop means for producing pig iron from ore other than with the blast furnace but if a blast furnace is used for production, maximum conversion economy can be attained only with strict adherence to proved blast furnace operating principles. The opportunity for the development of operating practice methods, including the use of oxygen enriched air for blast, which will more efficiently serve the proved operating principles, has not been exhausted, and such development offers greater opportunity for improvement in operating economy than is possible with change in furnace design. If means other than the blast furnace are developed for production of pig iron they must meet the test of competitive commercial economy before they can relegate the blast furnace to obsolescence, the same as the sponge iron processes attempted, but failed, to do.

Any change in present furnace design requires consideration of past steps in development to the present design. Knowledge of the reduction of metallic iron from ore has been known to man since Biblical days. The Catalan forge was the first known forced draft operation and the first major change in furnace design from the earlier natural draft reduction processes. On



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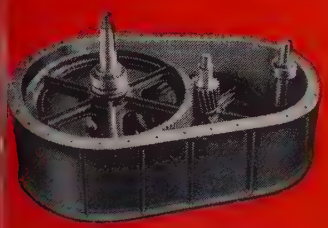
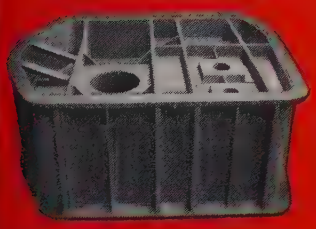


Welded Gear Housing



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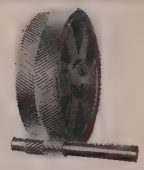

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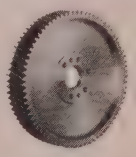
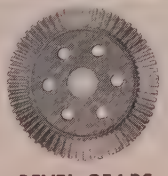


HELICAL GEARS
From 1" to 72" diameter, 24 DP to 1½ DP and up to 20" face.



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historian has commented to the effect that the Catalan forge permitted development of reduction of metallic iron from ore into a commercial industry, and with it the many forges erected to work the iron ore deposits of the Pyrenees mountains of Catalonia and Navarra became the first established center of the iron industry. Since its conception all progress in the art of reducing metallic iron from ore has simply been the development of ways and means to better serve the basic operating principle which is embodied in the Catalan forge design. It should be emphasized that an operating principle as basic and as far reaching as has been the Catalan forge principle, cannot be tampered with lightly since its successful application will not permit innovations which interfere with its basic advantages.

Principles Are Similar—The Catalan forge, Fig. 1, came into being early in the 14th century and in principle it is the progenitor of the blast furnace. The worthy Catalan ironmaster who first conceived the idea of using a forced draft in order to intensify his fire, and using some of the waste heat from the open forge to preheat ore as a preliminary step in his operation before charging the ore into the hearth, undoubtedly was a thinker. The most intense part of the fire was in the hearth, and the products of combustion, to a limited degree, would rise through the embanked ore at the side of the hearth.

Whether or not the worthy Catalan designer had any knowledge or conception of the iron reducing power of hearth gas is immaterial to the fact that with provision of means for preheating ore before its delivery to the hearth, the principle of relationship between a primary stage of raw material preparation for processing and a secondary stage for completion of processing came into being. With the two-stage operation and the forced draft a pasty mass of slag and metallic iron could be formed in the hearth in less time than was required with a single stage natural draft operation. With manual operation the pasty malleable mass of iron and slag was removed from the hearth and hammered into shape which could then be proc-

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essed for various purposes. With the hammering a large part of the slag was dissociated from contact with the metallic iron. In principle the steps of operation as outlined were the same as used for the production of wrought iron down through the years to the present century.

Construction of a forge to the design illustrated was a practical demonstration of improved effectiveness in heat generation and improved economy from waste heat recovery, even though operating efficiency in metallic yield and fuel rate would be very low compared to modern standards. Productive capacity was only a few pounds of metallic iron per hour compared to 2000 pounds or more per minute in a modern blast furnace. The fact remains that all subsequent development in the art of producing metallic iron in a blast furnace has simply been improvement in understanding and control of the functions of the two stages of processing.

Develops High Stack—Also in the 14th century, but at a later date than the Catalan forge, another thinker (German) built a draft stack 12 to 15 feet high directly over his forge and so created the Hockofen, Stuckofen, or high furnace of his era as shown in Fig. 2. The high furnace type of construction permitted charging raw stock directly over the forge fire.

By so doing a greater amount of heat was recovered than was possible with the Catalan forge. Consequently, more ore could be prepared and production increased by reducing the overall time required for the processing. Although the two stages of operation were more closely associated physically in the high furnace than in the Catalan forge the thermochemical reactions in the respective stages were the same, the improvement being greater efficiency in application of the two-stage principle which the Catalan forge had demonstrated, but there was no change in principle. Differences in thermal requirements of heat volume (Btu) and temperature (Btu concentration) for the respective stages of operation remained the same as for the Catalan forge.

Subsequent steps of enclosing the

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START STOP! START STOP! START STOP! START

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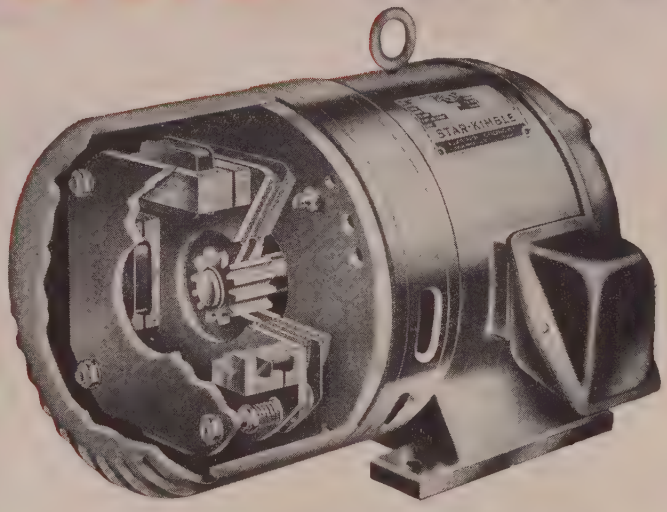

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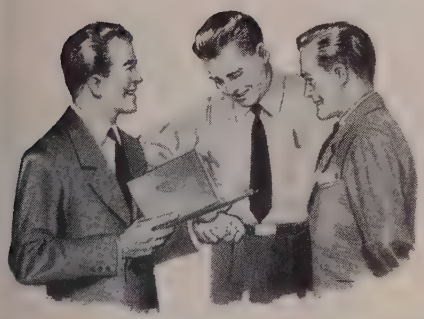

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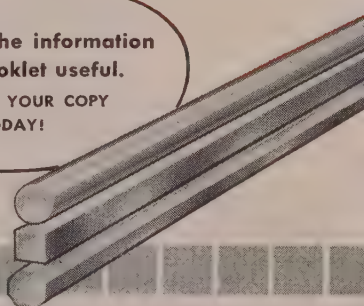

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open hearth of the high furnace, adding fluxing stone to the charge, and increasing blast volume, permitted the development of sufficient heat volume and temperature to change the malleable pasty mass of iron and slag conglomerate produced in the forge hearth into separate molten masses of iron and slag in the furnace hearth, each having sufficient fluidity to permit flow from the furnace in their respective identities. With these steps in development the blast furnace came into being and the smelting operation replaced the forge operation, but basically the principle of distinction between a stage of raw material preparation for fusion before delivery to the finishing stage to effect fusion, was not changed and has not changed to the present era.

Now, as in the first blast furnace, the work of preparing raw materials for smelting involves preheating the materials from their atmospheric temperature as charged into the furnace to their softening or initial fusion temperature. The reactions of drying the charge, calcining the stone, and reduction of iron oxide, are all effected at temperatures lower than the initial fusion temperature of stock solids; therefore, they are incidental to the attainment of fusion temperature. In this regard the fact may be emphasized that the advantage of the high furnace over the Catalan forge, namely, height of shaft over the hearth, which effected more efficient recovery of heat and provided opportunity for preparing more ore, has been retained down through the centuries of development of the blast furnace.

Smelting in Bosh and Hearth—The bosh and hearth smelting operation begins with attainment of the softening or initial fusion temperature of raw material solids which are then superheated to the temperature necessary for the formation of slag in its respective stages of formation; the assimilation of coke ash; and the maintenance of the slag to a free running temperature which permits it to flow from the furnace. All other smelting reactions, namely, reduction of silicon, manganese, and phosphorus, from their respective oxides, fusion of metallic iron to a molten state, and dissociation of

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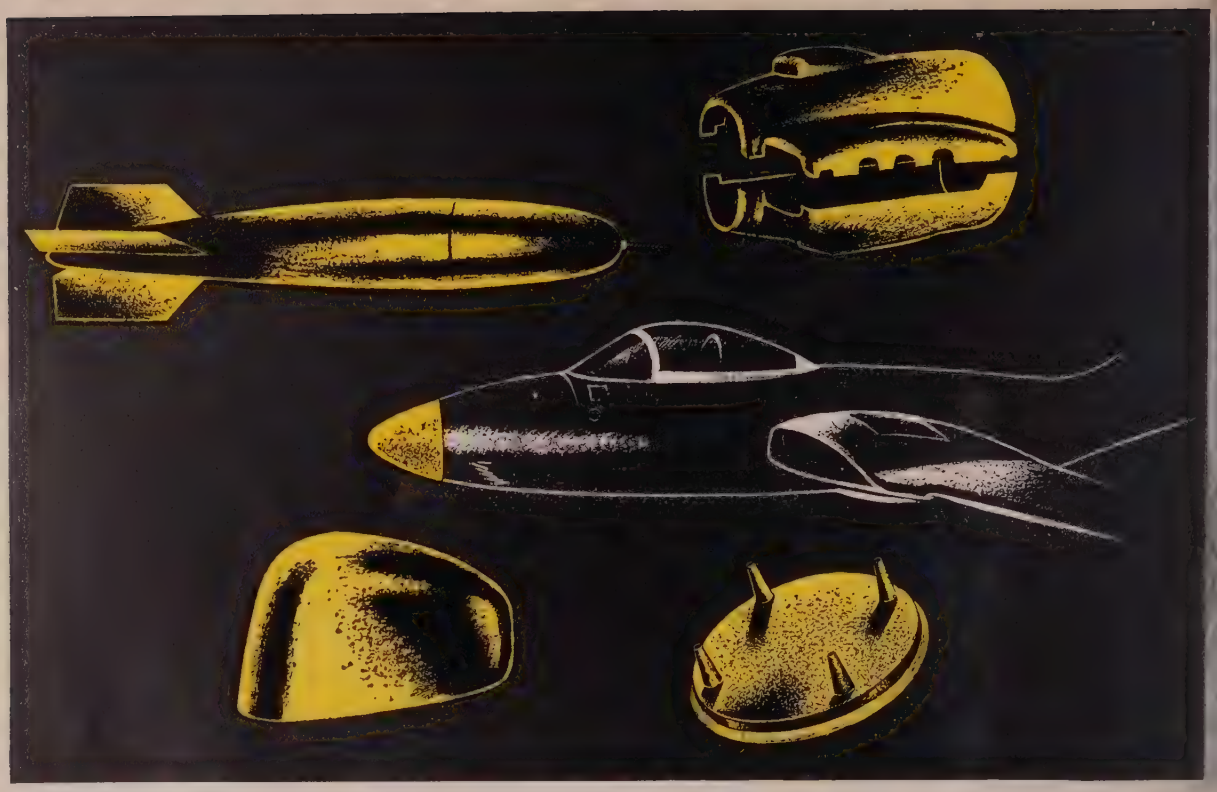

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All of these values exceed the requirements of the specification. Yet, the specific gravity of this reinforced plastic, which contains about 36 to 38 per cent resin, is only 1.8.

Other properties, such as dielectric values, electrical "transparency" for radar housings, and heat and chemical resistance, are also covered in Booklet H-16, "BAKELITE Polyester Resins for Reinforced Plastics." Write Dept. OY-49.

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moisture contained in the blast, are all effected at temperatures lower than the temperature required for slag formation and disposal. Consequently they are all incidental to the attainment of slag temperature requirements.

Undoubtedly, in the Catalan forge with its open hearth operation, the carbon dioxide (CO_2) would constitute a substantial percentage of the products of combustion rising from the hearth. To a degree the percentage of CO_2 contained in gas rising from the open hearth of the high furnace operation probably would be less than that of the Catalan forge. With the closed hearth of the blast furnace no CO_2 exists in the bosh gas because at temperatures existing in the bosh any CO_2 formed immediately reverts to carbon monoxide (CO).

The shaft, bosh and hearth, and carbon combustion reactions which occur in blast furnace operation have all been quantitatively measured[2].

Excess Reducing Capacity — Since iron oxide is reducible with carbon monoxide (CO) and with generation of sufficient heat to meet all needs, every blast furnace operation produces a weight of bosh gas (1/3 or more CO) substantially greater than the weight or iron oxide to be reduced, and therefore every blast furnace has iron oxide reducing capacity greatly exceeding its needs. Because of this fact there cannot be any benefit from supplying additional reducing capacity, or a more active reducing agent (example—hydrogen, H_2), with the introduction of auxiliary gases, because no furnace ever exhausts the reducing power of its own bosh gas; if it did there would not be any carbon monoxide (CO) in the gas leaving the top of the furnace. It is common operating knowledge that top gas from soft ore furnace operations consistently contains about 25 per cent CO, plus or minus 2 per cent. Also, as described, the reaction of iron oxide reduction is incidental to the attainment of initial fusion temperature of raw stock solids.

Reduction of iron silicates, which must first be melted in order to dissociate the iron oxide from the silicate compound, are not reducible by carbon monoxide, and cannot be dissociated at the below-fusion temperature of shaft operation, but the ultimate results of the silicate reducing reaction do not adversely affect the reducing power of the bosh gas. Insofar as reduction of metallic iron from ore is concerned the problem in blast furnace operation is one of orderly application and efficient recovery of heat used to effect other associated reactions which require higher temperatures than iron oxide reduction because there is never a deficiency in iron oxide reducing power. Even with an extremely cold furnace the percentage of unreduced iron oxide existing in slag tapped from the furnace is rarely as high as 1.00 per cent.

Although the chemical composition of bosh gas assures a constant surplus of iron oxide reducing capacity the total weight of gas leaving the top of the furnace (al-

[2] "Iron Blast Furnace Reactions," by S. P. Kinney, P. H. Royster and T. L. Joseph, Technical Paper 391, U. S. Bureau of Mines, Washington, and "Composition of Materials from Various Elevations in an Iron Blast Furnace," by S. P. Kinney, Technical Paper 397, U. S. Bureau of Mines, Washington.

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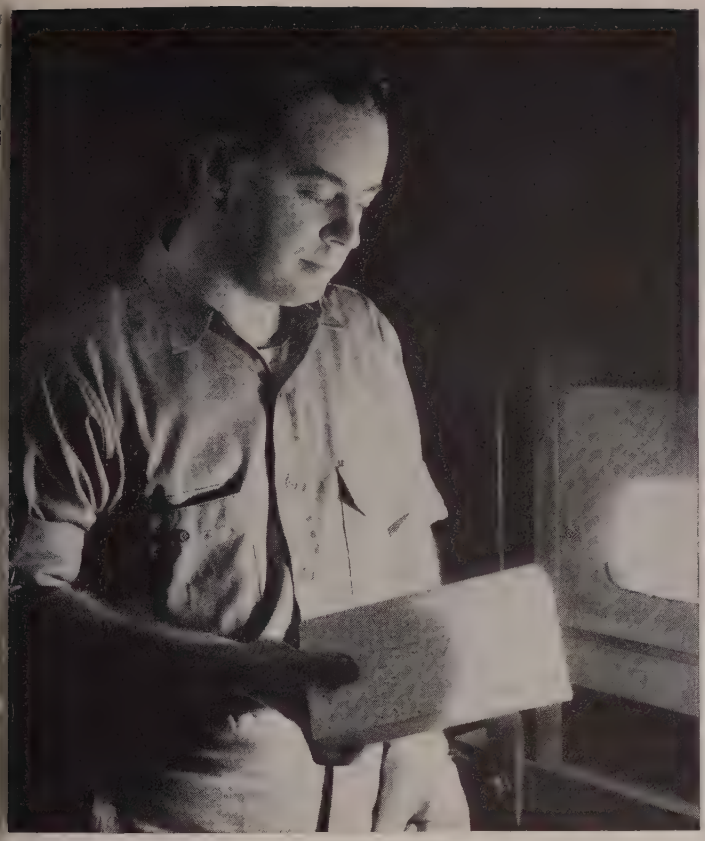

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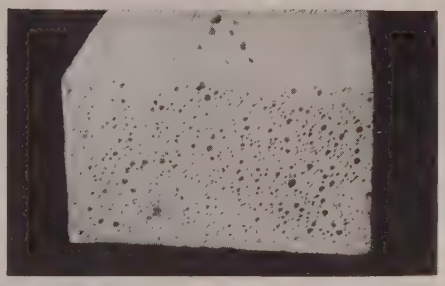

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These "bubble-brick", as they are sometimes called, are used in main linings as sidewalls, arches, doors, etc. and also for backing-up linings. They are used in many types of furnaces (e.g. powdered metallurgy furnaces, aluminum reverberatory furnaces, ceramic kilns, synthesis gas generators). The advantages are: longer refractory life, closer heat control, and a furnace that heats up quicker and needs less fuel.

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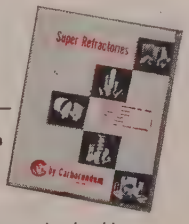

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ways approximately three times the combined weight of iron and slag produced) is a major consumer of sensible heat drained from the furnace. Therefore, increasing the weight of gas naturally produced with the operation by the addition of auxiliary gas, for any purpose whatsoever, will inevitably increase the drainage of sensible heat from the furnace and thereby adversely affect the thermal economy of the operation.

In view of the evidence presented the goal to strive for is a reduction in the weight of gas produced and not an increase of it.

Two Divisions of Operation—As described, each of the two divisions of furnace operation has a peak temperature which must be attained. Each division has certain thermochemical reactions which are incidental to the peak temperature attainment. Each reaction requires a certain volume of heat (Btu) for its completion. The ratio to each other of the total Btu requirements of the two divisions indicates their ratio of preparation to smelting capacities.

Chemical and physical properties of raw materials used, degree of efficiency attained in gas-solid contact and transfer of heat from gas to stock, the time allowance necessary for orderly completion of all the heat consuming reactions before the heat can be absorbed and retained for fusion, the blowing rate, and the stock travel rate, are all vital factors for determining raw material *preparation capacity*.

Heat consuming reactions of silicon, manganese, and phosphorous reduction, dissociation of blast moisture, ratio of weights of iron and slag produced, and heat volume concentration requirements (temperature), which is determined by slag mineral composition, are all vital factors in determining *smelting capacity*.

An approximate ratio of preparation to smelting capacities can be indicated for any furnace operation with calculation of a thermal balance.

Features of Dual Principle — With the development of the blast furnace certain subdivisions of the two-stage operating principle which were dormant in the Catalan forge operation became progressively

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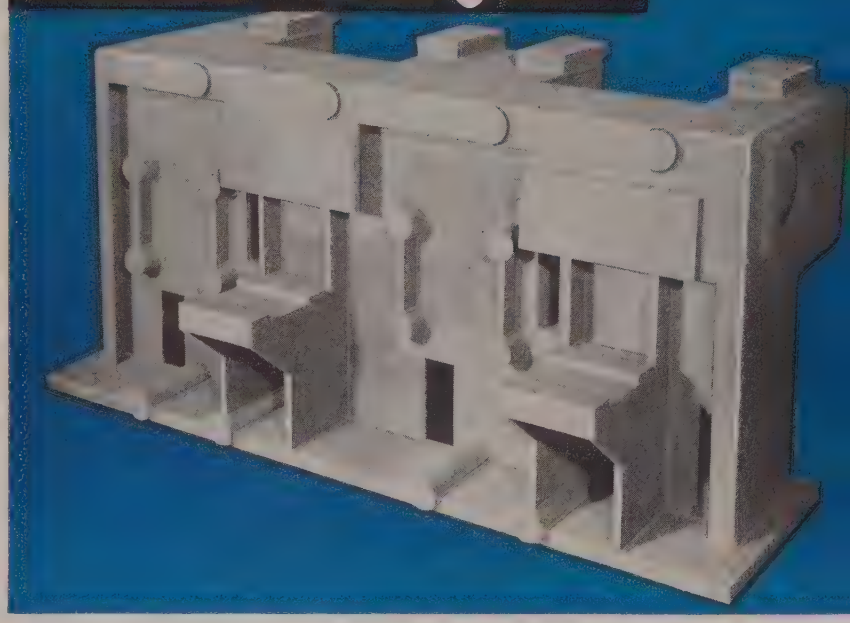

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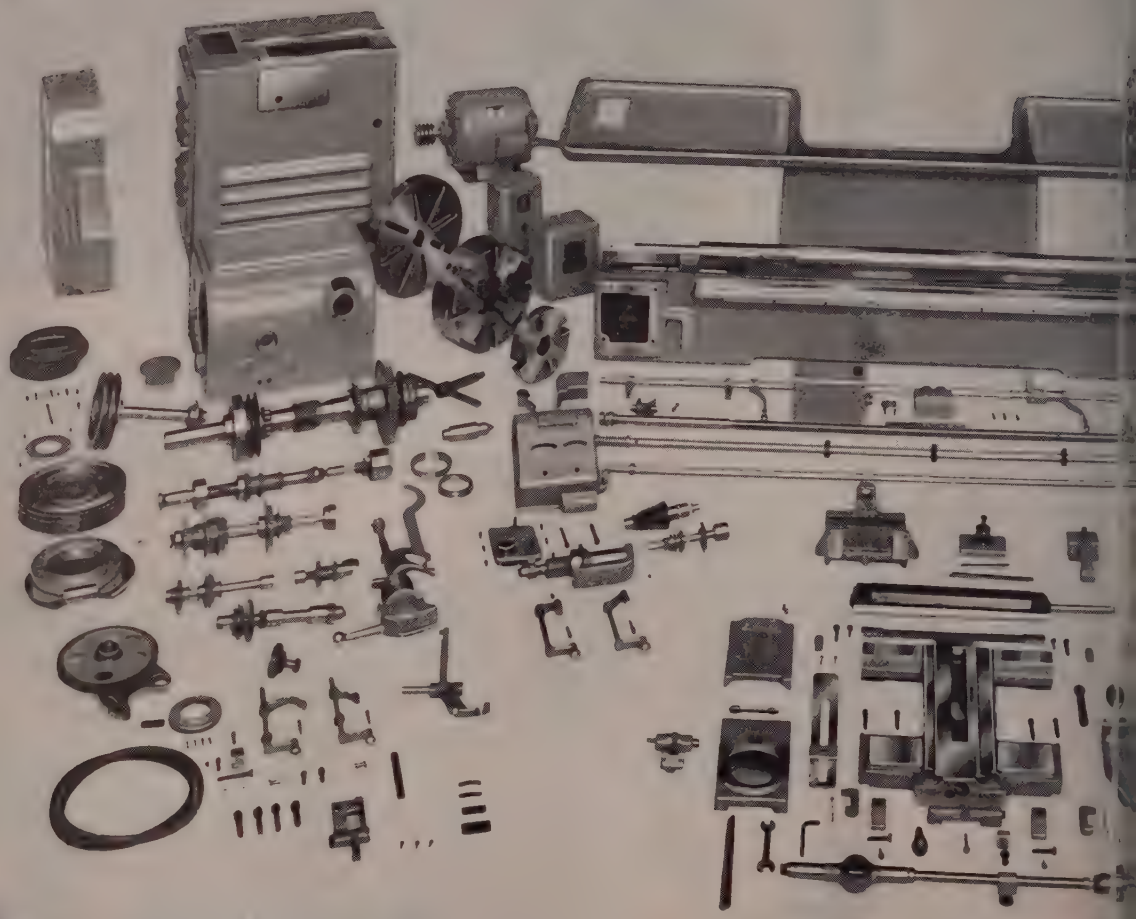

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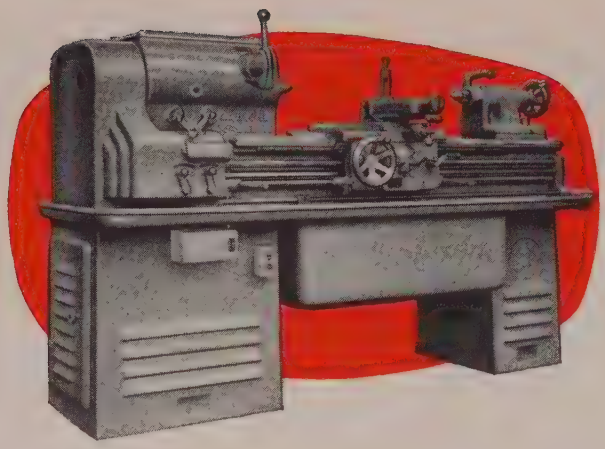

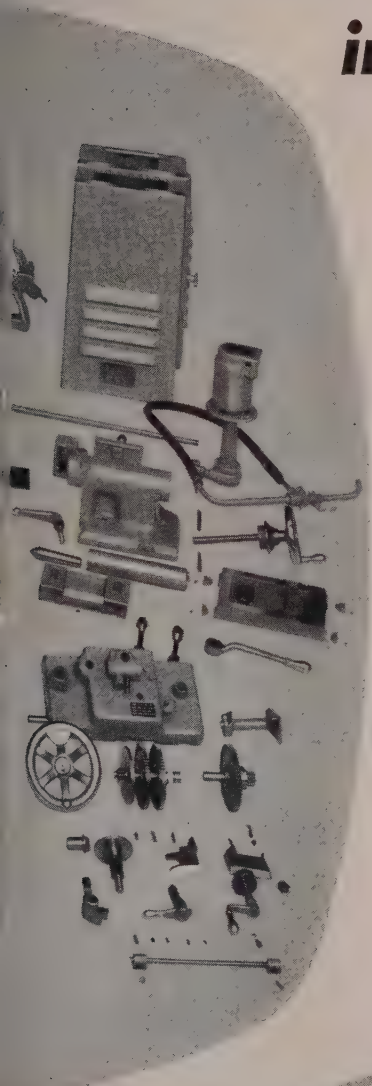

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more important as the size of furnaces and increased rate of production required closer co-ordination and control of the work of the two stages. The opportunity which existed in the Catalan open hearth forge operation for loss of heat through radiation to atmosphere is shown in Fig. 1. With a production rate of only a few pounds of metallic iron per hour, and with the intermittent nature of the operation caused by necessity of manual removal of the pasty mass of iron and slag from the hearth, there was no need for the consideration, or even recognition, of the relationship between preparation and finishing capacities. But with the progressive increase in the furnace size and productive capacity, culminating in modern blast furnaces producing 2000 pounds or more of metallic iron per minute, producing a product to a specified chemical composition, under sharply competitive commercial conditions, relation between preparation and smelting capacities, and closer co-ordination of the two, are of paramount importance because of the limited time available in the continuous operation for effecting the work of the respective stages of processing in the orderly sequence required for maximum efficiency in metallic yield and in conversion economy.

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CALENDAR OF MEETINGS

March 15-19, American Chemical Society: Spring meeting, Hotels Statler and Biltmore, Los Angeles. Society address: 1155—16th St. NW., Washington 6. Assistant secretary: R. M. Warren.

March 16-18, National Association of Waste Material Dealers: Annual meeting, Hotel Conrad Hilton, Chicago. Association address: 271 Madison Ave., New York 16.

March 16-20, National Association of Corrosion Engineers: Annual conference, Hotel Sherman, Chicago. Association address: 919 Milam Bldg., Houston 2. Secretary: A. B. Campbell.

March 16-20, National Association of Manufacturers: Institute on Industrial Relations, Hollywood Beach hotel, Hollywood-by-the-Sea, Fla. Association address: 14 W. 49th St., New York 20. Director, employee relations division: Sybil S. Patterson.

March 17-18, Steel Founders' Society of America: Annual meeting, Edgewater Beach hotel, Chicago. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

March 18-20, American Society of Tool Engineers: Annual meeting, Hotel Statler, Detroit. Society address: 10700 Puritan Ave., Detroit 21. Executive secretary: Harry E. Conrad.

March 19, National Industrial Conference Board: General session, Netherland-Plaza hotel, Cincinnati. Board address: 247 Park Ave., New York. Secretary: Clyde Rogers.

March 19-20, Porcelain Enamel Institute: West Coast conference, Hotel Statler, Los Angeles. Institute address: DuPont Circle Bldg., Washington. Secretary: John C. Oliver.

March 19-20, American Hot Dip Galvanizers Association Inc.: Annual meeting, Netherland Plaza hotel, Cincinnati. Association address: 1506 First National Bank Bldg., Pittsburgh 22. Secretary: Stuart Swensson.

March 23-25, Liquefied Petroleum Gas Association: Annual Southeastern district convention & trade exhibit, Hotel Biltmore, Atlanta. Association address: 11 S. LaSalle St., Chicago 3. Publicity: Robert E. Borden.

March 23-27, American Society for Metals: Western metals congress & exposition, Pan-Pacific Auditorium, Los Angeles. Information: 7619 Beverly Blvd., Los Angeles. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

March 23-27, National Association of Power Engineers Inc.: Annual spring meeting and exhibit, Hotel Sherman, Chicago. Association address: 176 W. Adams St., Chicago 3. Secretary: A. F. Thompson.

March 25-27, Pressed Metal Institute: Annual meeting, Hotel Carter, Cleveland. Institute address: 2860 E. 130th St., Cleveland 20. Managing director: Orrin B. Werntz.

March 25-27, Society of Automotive Engineers: National production meeting, Hotel Statler, Cleveland. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

March 26-27, Instrument Society of America and Carnegie Institute of Technology: Iron & steel instrumentation conference, Hotel Roosevelt, Pittsburgh. Society address: 921 Ridge Ave., Pittsburgh 12. Secretary: Richard Rimbach.

March 31-April 2, The Magnesium Association: International magnesium exposition, National Guard Armory, Washington. Association address: 122 E. 42nd St., New York 17. Secretary: Martha I. Hanson.

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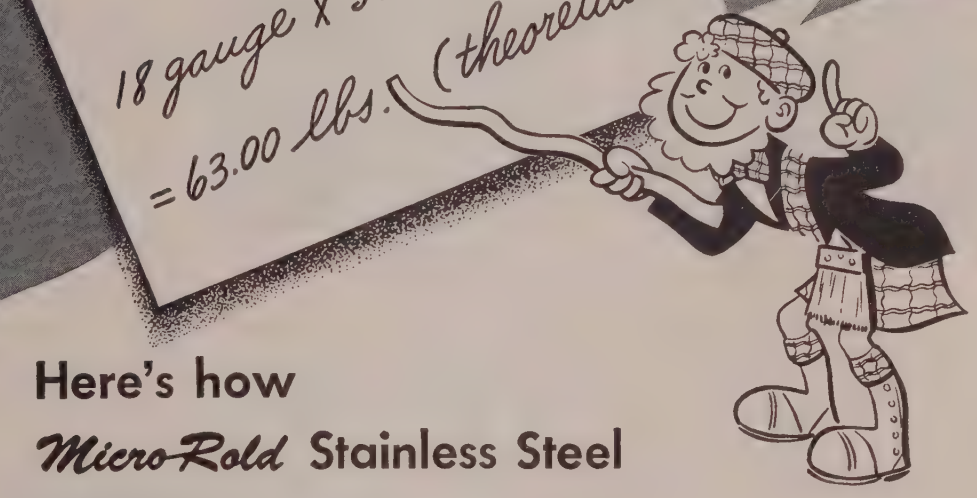

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. . . appointments in the carbide sales division, Firth Sterling Inc.

(*Continued from Page 92*)

office, **A. P. Green Fire Brick Co.**

Firth-Sterling Inc., McKeesport, Pa., appointed **E. G. Moffat** manager, carbide sales division, succeeding **C. R. Harmon**, resigned. **Kenneth F. Julin** was made assistant manager of the division. Other appointments include **Fred Lord** as chief engineer, mining sales division, and **J. Martin Stokes** as assistant general sales manager-administration.

Col. William J. Darmody, U. S. Army, ret., joined **Sheffield Corp.**, Dayton, O., as part-time consultant. Before retiring from active service, he spent eight years as chief of the gage department at Frankford Arsenal, responsible for Army Ordnance gage laboratories, gage design and supply on a national basis.

Allan J. Weinberger joined **Sprague Electric Co.**, North Adams, Mass., as manager of its Dayton, O., application engineering office. He formerly was section head, Test Devices Division, U. S. Naval Ordnance plant, Indianapolis.

Karl S. Howard was appointed assistant vice president, foundry division, **Canadian Car & Foundry Co. Ltd.**, Montreal, Canada.

Bay State Abrasive Products Co. appointed **S. Gordon Saunders** district manager, Detroit office and warehouse. He succeeds **Elden L. Auker**, appointed general sales manager located in Westboro, Mass. Mr. Saunders has been on the staff of K. T. Keller, president of Chrysler Corp., as general manager, cycleweld division.

F. Dier Tincknell was elected treasurer, **Chain Belt Co.**, Milwaukee.

Appointments in the engineering and construction division of **Koppers Co. Inc.**, Pittsburgh, include **A. B. Fisher Jr.**, named assistant general manager, and **G. P. Wilson Jr.** as manager of control, supervising finance and budgetary functions.

W. B. McMillan, president and director, Hussman Refrigerator Co., was elected a director of **Wagner Electric Corp.**, St. Louis, to succeed the late **Charles B. Fox**, retired president of Aluminum Ore Co. and former vice president of its parent firm, Aluminum Co. of America.

Angus A. MacDonald was appointed assistant chief engineer in charge of two-way radio development at the communications and electronics division, **Motorola Inc.**, Chicago.

J. C. Freyberg, for the last nine years with Wheelco Instruments Co. in sales, sales promotion and advertising positions, has joined **Panellit Inc.**, Chicago, as advertising manager of the company and its two associated companies, Pa alarm Products Inc. and Panasc Inc.

Detroit Steel Products Co. appoir ed **Mark Dobbins** as executive e gineer of the building panel divisi with headquarters in Buffalo. succeeds **Robert C. Findlay**, nam assistant sales manager of the div sion with headquarters in Detro

Taft-Peirce Mfg. Co., Woonsock R. I., appointed **Robert S. Ford** de uty assistant secretary, and **L. Hays** deputy assistant treasurer.

Dick Kellogg transferred his a tivities at **Anaconda Wire & Cab Co.** from sales to production. has been assigned to the Mario Ind., mill.

W. Raymond Myers was appointe assistant manager, original equi ment sales, in the metal produc division of **Goodyear Tire & Ru ber Co.**, Akron. **George H. Efflan** who has been manager of tra sales for the rim division, conti ues in that capacity as manag of service sales for the metal pro ucts division, formerly called t rim division.

Brainard Steel Division, Warre O., Sharon Steel Corp., appoint sales representatives to mark steel strapping in Boston, Detr and Cincinnati areas. **Richard McLean** is assigned to Bosto **James R. Carrier** to Detroit, a **William L. Fleming** to Cincinna

Lee C. Becker was promoted manager of laboratory operatio for all branches of **Bausch & Lom Optical Co.**, Rochester, N. Y. succeeds **Roy O. Pennock**, pr moted to vice president and ge eral manager, Bausch & Lomb O tical Co. Ltd. of Canada.

John K. Northrop, retired preside of Northrop Aircraft Inc., has be retained on a part-time basis as consultant to the president of Ga rett Corp., Los Angeles.

Rockwell Mfg. Co.'s meter a valve division appointed **Paul Kreuch** as assistant to vice pre dent in charge of sales and **Cour ney C. Shenkle** as assistant vice president in charge of man

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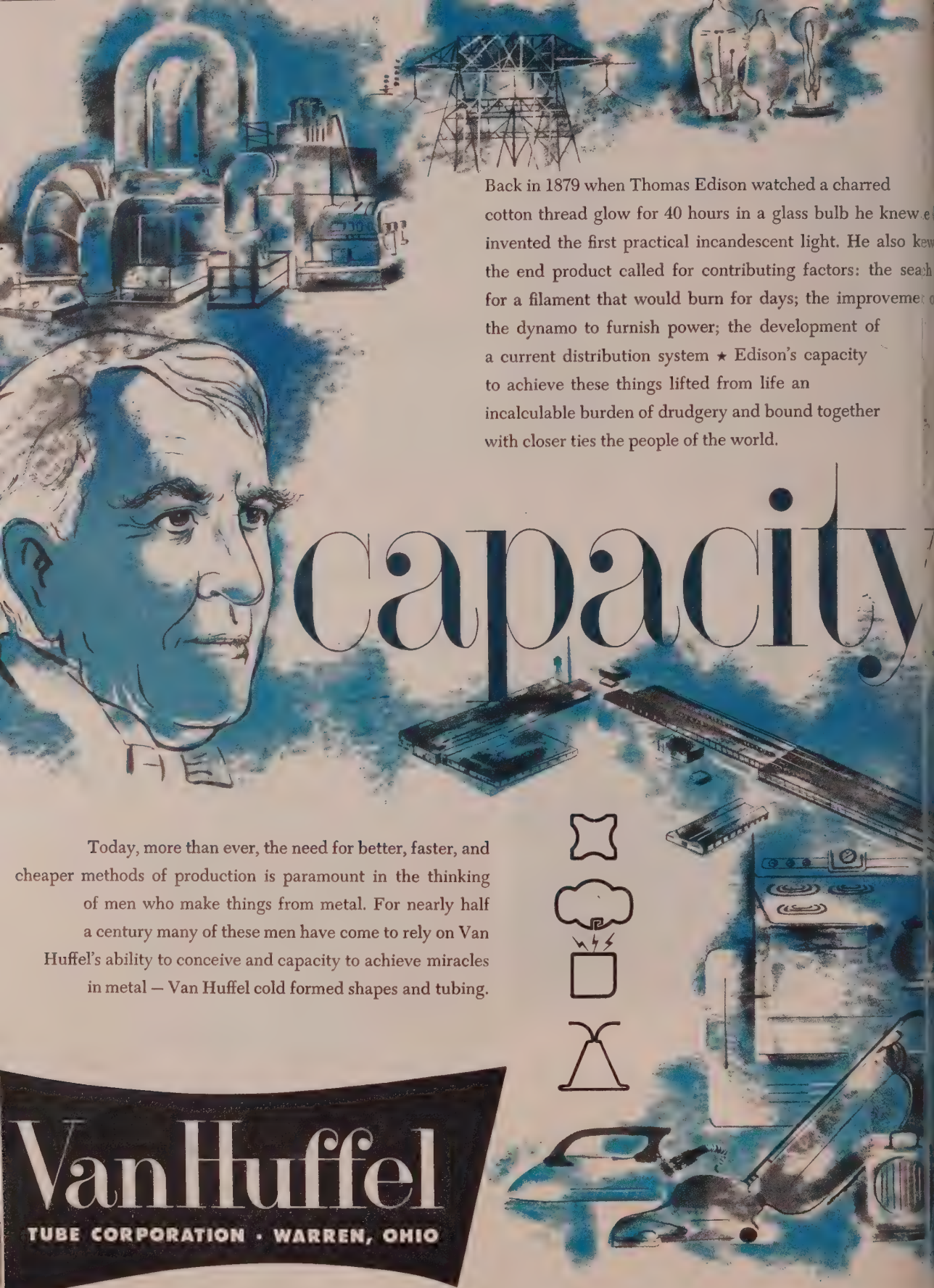
BAKER'S MAGDOLITE is a dolomite of superior chemical, physical and mineralogical composition, whose properly burned, grain-size particles will help you get more uniform ingots, at lower fuel costs, with less defective production material.

The next time you order dolomite, specify BAKER'S MAGDOLITE—the original Deadburned Dolomite. The many years of experience of the J. E. Baker Company are your assurance that BAKER'S MAGDOLITE will always be 5 ways better: COMPOSITION, PREPARATION, STRENGTH, ECONOMY, QUALITY.

JEBCO
PRODUCTS
SINCE 1889
MAKERS OF BAKER'S MAGDOLITE

THE J. E. BAKER COMPANY
YORK, PENNSYLVANIA
PLANTS: York, Billmeyer, Pennsylvania • Millersville, Ohio



Back in 1879 when Thomas Edison watched a charred cotton thread glow for 40 hours in a glass bulb he knew e invented the first practical incandescent light. He also kew the end product called for contributing factors: the sea h for a filament that would burn for days; the improveme the dynamo to furnish power; the development of a current distribution system ★ Edison's capacity to achieve these things lifted from life an incalculable burden of drudgery and bound together with closer ties the people of the world.

capacity

Today, more than ever, the need for better, faster, and cheaper methods of production is paramount in the thinking of men who make things from metal. For nearly half a century many of these men have come to rely on Van Huffel's ability to conceive and capacity to achieve miracles in metal — Van Huffel cold formed shapes and tubing.

Van Huffel

TUBE CORPORATION · WARREN, OHIO

WELDED · LOCK SEAM · OPEN SEAM · BUTTED TUBING · METAL SHAPES · MOULDIN

FRANK KOMERSKA
. . . Ainsworth Mfg. Detroit plant mgr.

ıcturing. Mr. Kreuch continues) supervise sales in the Chicago rea. Both men will have headuarters in Pittsburgh.

insworth Mfg. Corp., Detroit, apointed **Frank Komerska** Detroit lant manager and **Charles W. 'eiler Jr.** assistant secretary. Mr. omerska has been with Ainsworth nce 1945 as factory superintendnt and on special assignments.

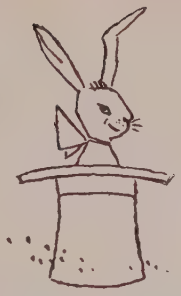
aul D. Cornelius heads the design nd research department of **Vlier ngineering Inc.**, Los Angeles. Preiously he was chief engineer for O. Manufacturing Co.

ew officers of **Wright-Hibbard Inustrial Electric Truck Co. Inc.**, helps, N. Y., are **W. B. Huntley** resident and treasurer, **Richard E. layberry** vice president and sales anager, and **C. J. Spacher** vice resident and production manager. r. Huntley has for many years een with Brace-Meuller-Huntley ıc., distributor of steel and alumium, and continues as vice presient.

H. Fraser, general superintendıt, **Dominion Iron & Steel Ltd.**, ydney, N. S., for 23 years, retired om active association with the ompany.

ohn E. Thompson Jr, was apointed assistant to general superıtendent, Gary Ind., sheet and tin ill, **United States Steel Corp.** He succeeded by **Isaac R. Yonan** as

(*Please turn to Page* 142)



MAGICIANS

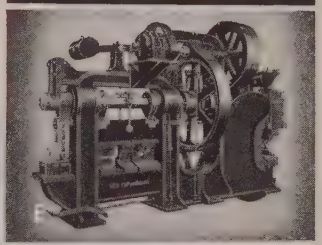
We don't pull rabbits out of hats. Our specialty is designing and building machines that work like "magic" in solving many heavy metal working production problems. The machines shown are typical examples. One of them may be just the answer for your personal production problem. If not, our broad experience in varied fields of the metal working industry enables us to design and build the ideal machine to meet your specific demands.

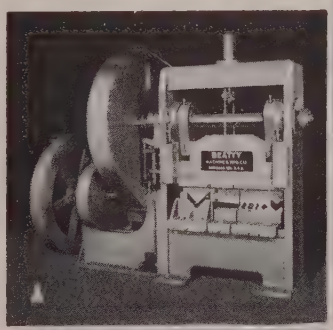
A. BEATTY Guillotine Bar Shear for "short order" shearing of bars, angles, rounds and squares.

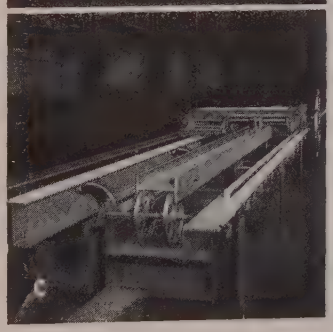
B. BEATTY Guillotine Beam Punch. Punches webs and flanges in "I" beams from 6 to 30 inches.

C. BEATTY Spacing Table handles web and flange punching without roll adjustment.

D. BEATTY Horizontal Hydraulic Bulldozer for heavy forming, flanging and bending.







BEATTY
MACHINE & MFG. CO.
HAMMOND • INDIANA

E. BEATTY CoPunShear, one unit that does coping, punching and shearing without changing tools.

F. BEATTY Gap Type Press for forming, bending, flanging and pressing. Capacity 250 tons.

PITTSBURGH FOUNDRY.

JOSEPH M'CLURG respectfully informs his friends and the public, that his *AIR FOUNDRY* is now in complete operation, where he will execute all kinds of *CASTINGS* in the best manner, as also machinery of whatever description, cast to any given pattern.

He also continues to carry on

The Manufactory of Tobacco.

And has now on hand a Quantity of

PLUG AND PIG TAIL TOBACCO, SEGARS AND RAPPEE SNUFF,

equal if not superior in quality, to any manufactured in the state, and lower in price than it can be brought here.

HE HAS LIKEWISE ON HAND,

A handsome & general Assortment OF GOODS,

Suitable for the present and approaching seasons.

ALSO,

A Large and General Assortment of

NEW GENEVA

Window and Hollow Glass,

Of a superior quality, and at the Pittsburgh prices. Merchants descending the Ohio, and others, will find it to their interest to call on him.

February 12. St

Advertisement of 1805, placed by Joseph McClurg, founder of "Pittsburgh Foundry," first in Pittsburgh, and forerunner of Mack-Hemp. This ad appeared in the *Commonwealth*.

1803

Mack-Hemp's one hundred-fifty yeas

MACK-HEMP ROLLS

with the striped red wabblers

for all metal forming operations

There's a hundred and fifty years of *experience* and *know-how* in Mack-Hemp Rolls; experience learned in every segment of the metals industry, and know-how which has kept pace with the growing industries from the days of McClurg's *AIR FOUNDRY* to the present.

Although Mack-Hemp can no longer accommodate you with snuff and window glass, our line of M-H rolls with the striped red wabblers is modern and complete. We are always glad to discuss your rolling mill operations with you.

1953

service to the metals industry

check this list against your roll requirements

The metallurgical properties of all M-H rolls are carefully controlled for maximum service

MACKINTOSH-HEMPHILL COMPANY · PITTSBURGH U.S.A.

KINTOSH-HEMPHILL COMPANY

Makers of the Rolls with the Striped Red Wabblers

PITTSBURGH AND MIDLAND, PA.

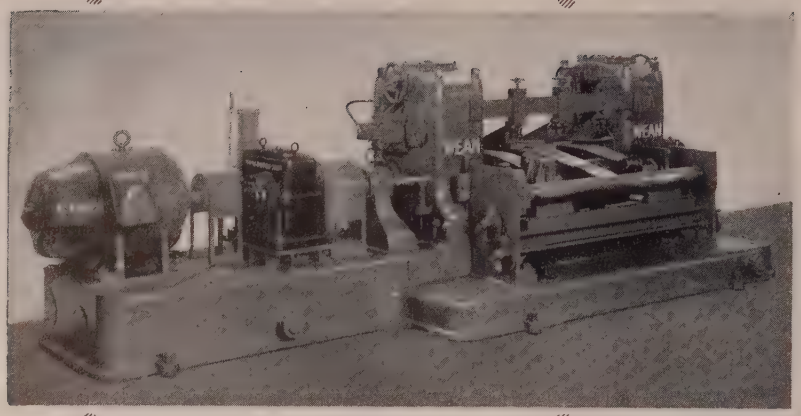
OSH-HEMPHILL PRODUCTS INCLUDE: rolls . . . steel and special alloy . . . completely integrated strip mills . . . heavy duty engine lathes . . . -Hemphill rotary straighteners . . . improved Johnston patented corrugated and slag-handling equipment . . . shape straighteners . . . end-thrust bearings . . . shears . . . levellers

ROLL APPLICATIONS

for normal mill conditions:

Slabbing Mills	Midland Superalloy
Blooming Mills	M-H Technalloy
Structural Mills:	
Roughing	Midland Superalloy
Intermediate	Midland Supermetal B
Finishing	Midland Supermetal E
Merchant Mills:	
Tandem Roughing	Midland Superalloy
First Roughing	Midland Supermetal B
Intermediate	Midland Supermetal B
Leaders	Midland Supermetal D
Finishers	Nironite C
Continuous Bar & Billet Mills:	
Roughing Mill	Midland Superalloy
Finishing Mill—Rough	Midland Supermetal B
Finishing Mill—Finish	Nironite C
Rod Mills:	
Roughing	Nironite AX
Intermediate	Nironite C
Finishing	Nichillite No. 2
Billet Mills — 3-High	Midland Supermetal D
2-H Strip and Hoop Mills:	
Roughing	Nironite A
Finishing	Nironite C
Sheet & Tin Mills:	
Roughing	Technalloy A
Hot Rolls	Mo Technichill
Water Mills	Nichillite No. 2
Cold Rolls	Nichillite No. 4
2 and 3-High Plate Mills	Nironite F
Floor Plate	Midland Supermetal B
Universal Mills	Nironite F
Three-High Breakdown Mills	Midland Supermetal A
Three-High Finishing Mills	Nironite F
Pipe Mills—Lap & Butt Weld, Seamless Electric Weld:	
Piercing	Machempite
High Mill Pinch Rolls	Technikrome B (Adamite)
High Mill	Technikrome B (Adamite)
Reeler	Nironite A
Sizing	Nironite A Special
Reducing	Technikrome E (Adamite)
Finishing	Techni-Spec. Chill
Planishing	Techni-Spec. Chill
Welding	Technikrome B (Adamite)
Straightening	Techni-Spec. Chill
Forming	Techni-Spec. Chill
Non-Ferrous Mills:	
Hot Break Down—2-H	Nichillite No. 2
Cold Break Down—2-H	Midland Superalloy
Cold Running Down—2-H	Nironite B
Cold Finishing—2-H or 4-H	Nichillite No. 4
Back-Up Rolls	Midland Special
Continuous 4-High Wide Strip Hot Mills:	
Back-Up Rolls	Midland Special
Scale Breakers No. 1	Midland Superalloy
Roughing No. 1 Stand	Midland Superalloy
Work Rolls—No. 2 Stand	Nironite A
Work Rolls—No. 3 Stand	Nironite A
Work Rolls—No. 4 Stand	Nironite A
Scale Breaker No. 2	Midland Superalloy
Work Rolls No. 5	Nironite F
Work Rolls No. 6	Nironite F
Work Rolls No. 7	Nironite F
Work Rolls No. 8	Nironite F
Work Rolls No. 9	Nironite F
Work Rolls No. 10	Nironite F or Nichillite #6
Edging Rolls	Technikrome B (Adamite)
4-High Tandem Mills, Temper and Skin Pass Mills:	
Back-Up Rolls	Midland Special
Work Rolls	Nironite F or Nichillite #6

Mackintosh-Hemphill manufactures several types of rolls for each of the applications referred to above. A conference with a Mack-Hemp roll engineer will assure you the most efficient and economical roll for your particular requirements.



H & S SPEED REDUCERS play a part

in side trimming strip steel at high speeds

• Cutting strip steel at high speeds is a tough job and Horsburgh & Scott Speed Reducers play an important role as part of the Wean Side Trimmers . . . available in various sizes for edge trimming hot and cold rolled strip from .006″ to ⅜″ thick. This is only one of the many fields in industry where H & S Speed Reducers are handling tough jobs for long uninterrupted periods with great savings in maintenance. It will pay you to talk with our engineers about your speed reduction problems.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U. S. A.

Send note on Company Letterhead for Speed Reducer Catalog 46

GILBERT J. SCHUELKE
. . . asst. mgr. at Chain Belt div.

superintendent, production pl ning.

Chain Belt Co., Milwaukee, a pointed **Gilbert J. Schuelke** as sistant sales manager of its cha and transmission division. He s served the company in various gineering and sales assignments the Milwaukee works and in district sales offices in Atlan and Milwaukee.

W. H. Paul was appointed manag of the Braddock, Pa., plant, **Am ican Chain & Cable Co. Inc.**

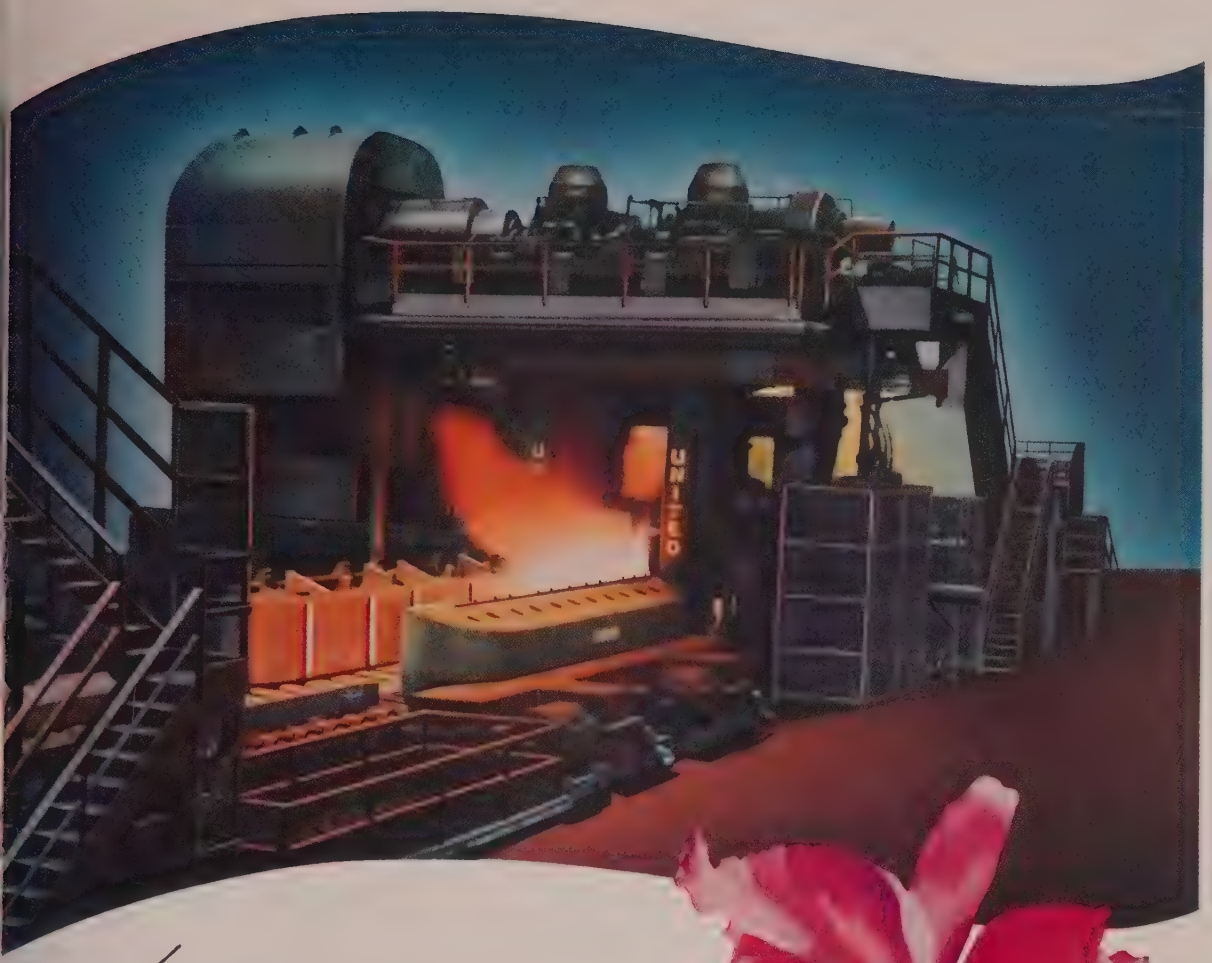
American Wheelabrator & Equ ment Corp., Mishawaka, Ind., p moted **K. E. Blessing** to distr manager of its sales office in J boken, N. J. **F. John Pichard** w made sales engineer there.

Wayne L. Krieger was appoin district sales representative **Caterpillar Tractor Co.** with he quarters in Sacramento, Calif.

Charles P. Moeller was appoin general sales manager in charge trackwork activities, **Taylor-Wh ton Iron & Steel Co.**, Cincinnati

Robert H. Zoller of Zoller Cast Co., Bettsville, O., was elected pr ident of the newly formed **Melti Research Inc.**, also located at Bet ville. He still heads the form company, a gray iron foundry.

Lewis-Shepard, Watertown, Mas appointed **Francis E. Honsa** rep sentative in the southern Conn ticut area.



An Orchid to a Champion

45" Reversing Slabbing Mill which has broken all world records by rolling 214,842 net slab tons in one month.

designed and built by

United

ENGINEERING AND FOUNDRY COMPANY

Pittsburgh, Pennsylvania

PLANTS AT PITTSBURGH • VANDERGRIFT • NEW CASTLE
YOUNGSTOWN • CANTON

SUBSIDIARIES: ADAMSON UNITED COMPANY, AKRON, OHIO
LOBDELL UNITED COMPANY, WILMINGTON, DELAWARE
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Non-Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

The U. S. Steel Supply team that gives you

personalized service

He keeps our service *"special"*

● The District Manager is supervisor-in-chief of our team of specialists. In order to maintain the high degree of efficiency with which each of these specialists can serve you, he keeps in close touch with all phases of our business. He takes a personal interest in your business and is able to set warehouse policies which best satisfy your needs.

Talk to your U. S. Steel Supply salesman today. He is your personal contact with the team of U. S. Steel Supply specialists, and is ready at all times to give you prompt, courteous, complete, personalized service.

YOUR "ONE CALL" SOURCE OF STEEL SERVICE

U.S. STEEL SUPPLY

UNITED STATES STEEL SUPPLY DIVISION, UNITED STATES STEEL CORPORATION
HEADQUARTERS: 208 So. LA SALLE ST., CHICAGO 4, ILL. WAREHOUSES AND SALES OFFICES:

BALTIMORE · BOSTON · CHICAGO · CLEVELAND · HOUSTON · LOS ANGELES · MILWAUKEE · MOLINE, ILL.
NEWARK · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · TWIN CITY (ST. PAUL) · SAN FRANCISCO · SEATTLE
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TULSA · YOUNGSTOWN

UNITED STATES STEEL

NEW PRODUCTS and equipment

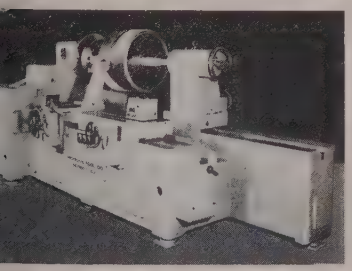
Reply cards on page 171 will bring you more information on any new products and equipment in this issue

ear Lead Checker

. . checks lead, axial pitch

Sine-Line model 1248 lead check- is designed to check both lead d axial pitch on large helical or rringbone gears, and parallelism teeth on large spur gears. Check- accommodates gears from 18 to inches OD, with maximum 25- ch face width and 96-inch shaft ngth. It takes either right or left nd lead.

The machine uses the sine bar inciple to check leads from 0 to



inches. Manual or power drive used for operation. No change gear mounting is necessary for ecking lead or axial pitch. Gears varying face widths or diam- ers, but with the same lead, can checked without changing the r setting. Michigan Tool Co., ept. ST, 7171 E. McNichols Rd., etroit 12, Mich.

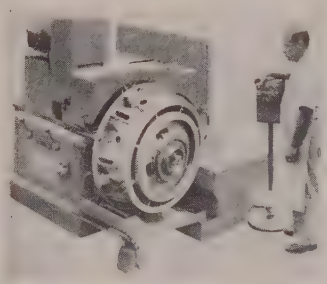
R MORE DATA—CIRCLE REPLY CARD NO. 1

ecision Boring Machine

. 40 operations per cycle

This way-type precision boring achine is a versatile tool with rtical indexing eight-station fix- re. Low mounting position of e fixture on the way facilitates ndling heavy awkward parts. dexing is hand-operated with lo- tion controlled by air-operated lo- tor pin actuated by a foot valve. On one job, 40 individual boring operations are performed on each part with a total cycle time of 12 minutes per part.

Table is interlocked with cross feed unit so it will not start the out-stroke until all tools on cross



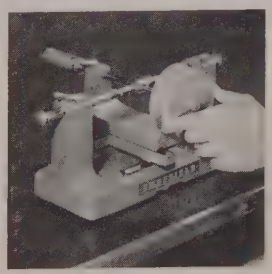
feed are clear. Table is also interlocked with the fixture so cycle cannot be started until part is properly indexed. Heald Machine Co., Dept. ST, Worcester 6, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Diameter Measuring Instrument

. . . floating carriage principle

This floating carriage diameter measuring machine will check all diametral thread elements simply and accurately. Machines are available in three models of different



capacities: Up to 4 inches with 8 inches between centers; to 7 inches with 12½ inches between centers; and from 6 to 12 inches with 14 inches between centers.

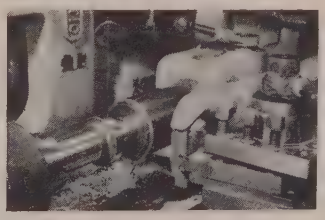
At right angles to the axis of two accurately aligned and adjustable centers is a free moving measuring carriage mounted on balls in v-ways. The carriage carries a micrometer sensitive reference point indicator. Carriage permits measurements to be taken along the center line and at right angles to the work. Vernier scale gives direct readings to 0.00001-inch. Sheffield Corp., Dept. ST, Dayton 1, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Tungsten Carbide Hand Hone

. . . longer between-grind life

Single-point tungsten carbide tools can be sharpened on the job with this hand hone. Function is to extend between-grind tool life an estimated 30 per cent when hone is used at first sign of tool dull-



ness. The user simply applies a few light strokes over the tool edge.

Hones are made from silicon carbide, bonded with the manufacturer's vitrified process. They are available in any required size, grade and grain. Chicago Wheel & Mfg. Co., Dept. ST, 1101 W. Monroe St., Chicago, Ill.

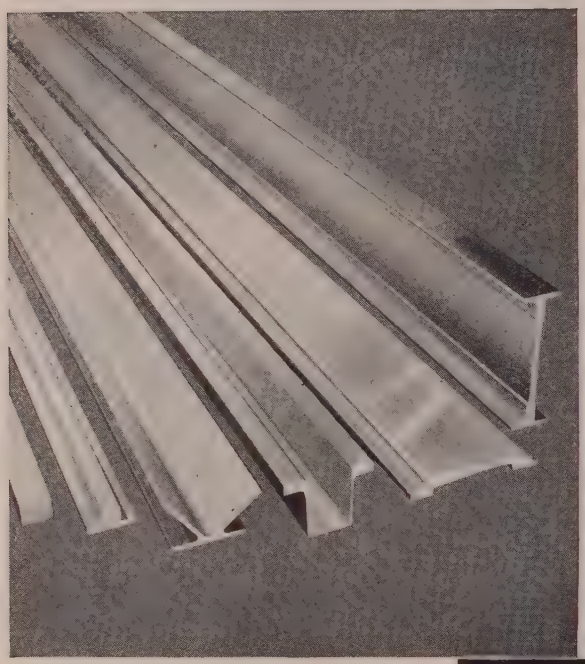
FOR MORE DATA—CIRCLE REPLY CARD NO. 4

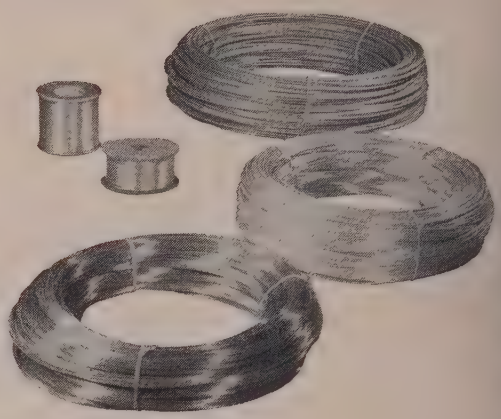
Vinyl Plastic Electrical Tape

. . . has 20 psi tensile strength

An electrical tape, known as Royalastic, is a plastic film about 0.006-inch thick. It has a tensile

KAISER ALUMINUM PRODUCTS



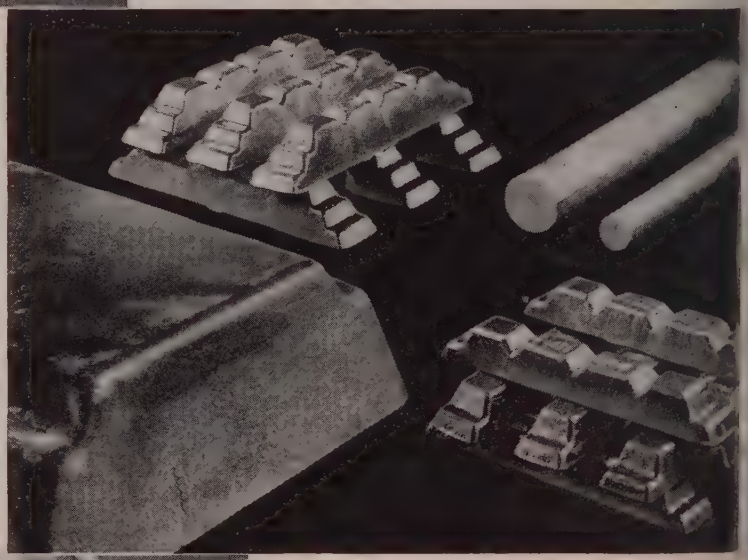


Wire

Supplied as round drawn wire, hexagonal wire, rivet wire, welding wire, screen wire, EC wire, redraw wire.

Extruded Shapes

Available in solid, rod, bar, semi-hollow and hollow shapes in all standard alloys. Also available in tubing.



Pig, Ingot and Billets

Kaiser Aluminum produces Pig, Ingot and Extrusion Billets in a range of alloys and sizes to meet your specific requirements.

Rod and Bar

Available in a wide range of alloys in rolled and cold finished rod and bar, screw machine stock, hexagonal bar, redraw rod, EC redraw rod, rivet rod and round forging stock.

or you...the nation's fabricators

HEET and PLATE to meet your specifications

Supplied as flat sheet, plate, coil sheet, circles in a complete range of alloys, sizes and tempers. Specialty sheets also produced to fill volume requirements. In addition, Kaiser Aluminum engineers will be glad to work closely with you to select proper alloys or to help improve production methods.

O SUPPLY you and thousands of other fabricators with uminum in the forms in which it can be used most conomically, Kaiser Aluminum produces a broad line f basic and semi-finished mill products.

More than 85 per cent of Kaiser Aluminum's total roduction is sold in the form of these mill products for ibrication by customers. It's the highest percentage in ie industry.

Kaiser Aluminum has earned an unsurpassed reputaon for promptness, dependability, and helpful service i providing these products.

Included among Kaiser Aluminum service facilities re: the Sales Engineering Department, the Developient Division, and the Metallurgical Research Diviion—all invaluable sources of experienced assistance nd technical data to users of Kaiser Aluminum.

For complete information, call or write any Kaiser Aluminum sales office. Located in principal cities. See our catalog in Sweet's Product Design File or write for copy. Kaiser Aluminum & Chemical Sales, Inc., Oakland 12, California.

Other Kaiser Aluminum products include: Industrial foil and electrical conductor. Kaiser Aluminum also supplies household, freezer and broiler foil for home uses, Shade Screening and Siding for the building industry and corrugated Roofing Sheet for farm and industrial buildings.

MAIL COUPON FOR FREE HANDBOOK

Send now for the new Sheet and Plate Handbook. 152 pages. A "must" for every fabricator of aluminum.

KAISER ALUMINUM & CHEMICAL SALES, INC.,
362 KAISER BLDG., OAKLAND 12, CALIFORNIA

Please rush my free copy of "Sheet and Plate Product Information."

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City_____ State_____

Kaiser Aluminum

setting the pace—in growth, quality and service

Fingertip heat control

right at the work-with the P&H Welding Twins

equipped with Dial-lectric Control

Dial-lectric Control is an exclusive P&H feature that helps you weld faster, easier, better — at less cost

P&H AC WELDER

As easy as tuning your radio — just turn the radio-type knob of the Dial-lectric Instantaneous Remote Control (or step on a foot treadle), to adjust heat accurately. Easy, quick-start arc. No hard-working cranks to turn. No moving parts to cause delays or maintenance expense. Sizes up to 625 amps., NEMA rated. Connectable to 220 and 440 volts.

P&H DC RECTIFIER WELDER

Also equipped with hand-or foot-operated Dial-lectric Control, to give the welder fingertip heat control at the work. No hard-working cranks to turn. No moving parts to wear out. Saves on power costs under load — and during idle and no-load periods. Protects the primary input line against unbalanced conditions. Three sizes, 200, 300, and 500 amps., NEMA rated.

P&H WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 WEST NATIONAL AVENUE • MILWAUKEE 46, WISCONSIN

the P&H *Line*

ength of 20 psi of width, excel- t abrasion resistance and good esion at low temperature. Tape ot affected by sunlight and has corrosive effect on electrical ductors. United States Rubber , Dept. ST, Rockefeller Center, w York 20, N. Y.

MORE DATA—CIRCLE REPLY CARD NO. 5

ckaged Dynamometer

. shows foot pounds, hp

elf-regulating absorption unit a torque scale that indicates ectly in foot pounds and horse- ver are two features of the mod- 2 Tru-Tork dynamometer. Self- ulating brake assures constant que loading regardless of speed

riations of motor under test. us, conditions similar to those countered in actual operation be simulated.

Torque scale permits rapid mo- testing by unskilled personnel hout use of computations or mulae. Switchgear is provided selecting either single or three- ase power for the motor under t. George L. Nankervis Co., pt. ST, 19255 W. Davison, De- it 23, Mich.

MORE DATA—CIRCLE REPLY CARD NO. 6

eet, Plate Dishing Tools

. increase machine versatility

Tools added to the manufac- rer's line of sheet and plate rking machinery permit users to rform dishing operations on ny metal types. Upper male d lower female tools can be ad- sted for stroke so degree of dish- g is varied from slight to an ex- me radius for deeper dishing erations.

High speed—2800 rpm—of the upper tool permits smooth finishing so the finished product has much the same appearance as a piece of metal after spinning. No forms are necessary and extremely large diameters are possible. Tools

have succeeded in operations on mild and stainless steel as well as copper, brass and aluminum. American Pullmax Co. Inc., Dept ST, 2455 N. Sheffield Ave., Chicago 14, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Bolt Heater

. . . for greater bolt stressing

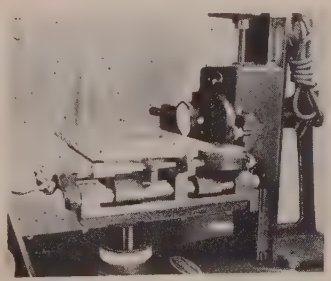
Greater bolt stressing is possible in large hollow holding bolts through the use of the Corox bolt heater. Heater can be supplied in ratings ranging from 1000 to 6200 w, all at 120 v. Various sizes of heater elements permit installation in bolts 1 to 3 feet long and hole diameters from ½ to 1-inch. Westinghouse Electric Corp., Dept. ST, Box 2099, Pittsburgh 30, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Universal Co-ordinate Stage

. . . has independent controls

Universal-type co-ordinate stage is equipped with independent measuring controls. These consist of a combination of two dial indicators



and two micrometer spindles for longitudinal and transverse travel measurements. Full 1½-inch longitudinal and 1-inch transverse travel is possible.

The entire stage unit is adjust-

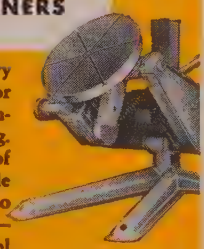
P&H

Welding Equipment speeds production schedules, cuts costs

P&H LOW-HYDROGEN ELECTRODES

13 types for high-strength welds on problem steels, steel castings, nickel-alloy steels, chrome-moly steels, .40 carbon castings, high-hardenable steels, aircraft and similar steels.

P&H POSITIONERS



Position heavy weldments for economical down-hand welding. Complete range of sizes to handle work from 2500 to 36,000 lbs. — remote-control and hand-operated models.

P&H WN-301 *Engine-Driven* DC ARC WELDER

2- or 4-Wheel Mountings

Portable. Equipped with Dial-electric Control, for fingertip heat control at the work — gives you faster, better welding. Runs at only 1750 rpm. Welding service range, 60-375 amps, NEMA rated.

Ask your P&H representative or distributor for complete information, or write for free bulletins.

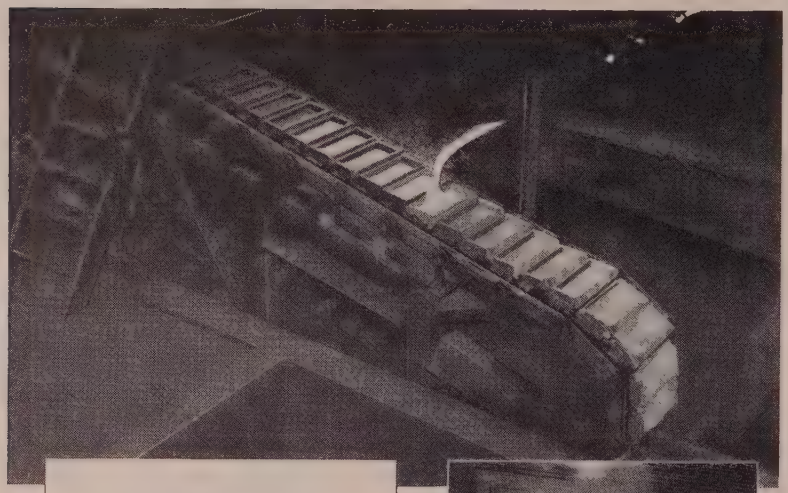
P&H WELDING DIVISION

HARNISCHFEGER CORPORATION

4411 W. National Ave., Milwaukee 46, Wis.

1484A

Simplified PIG CASTING



- Stationary wheel design eliminates 80% of moving parts
- For ferrous and non-ferrous smelters and foundries

Bailey ENGINEERS

PIG CASTING MACHINE

Cold pigs as delivered from the machine.

Here is the means to increased pig casting capacity—at a considerable reduction in maintenance and operation costs. Basis of this machine's performance and service are the stationary flanged wheels over which the endless chain of moulds runs.

WILLIAM M. Bailey COMPANY
ENGINEERS
LEADERSHIP THROUGH QUALITY
1221 BANKSVILLE ROAD PITTSBURGH 16, PA.

able for helix angle positioning to 10 degrees either side of center. Stage assembly also incorporates Swing-Away feature to facilitate changeover of lens units from one magnification to another without disturbing work setups. Portman Instrument Co. Inc., Dept. ST, 6 Manhasset Ave., Port Washington, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Dye Penetrant Test Kit

. . . quick spray spots defects

Packaged kit employing dye penetrant test to locate cracks in any solid material can be carried easily for inspecting small questionable areas and remote parts. To obtain clean and conveniently rapid spray

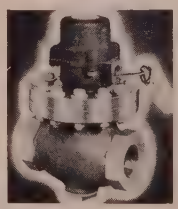
application to any part, the kit features spray can sealing of messy constituents.

After penetrant is sprayed on the clean surface, a cleaner follows, is removed and an even coat of white developer brushed on. Within seconds, cracks, pores or leaks show a bright red. No power or special lights are necessary. Magnaflux Corp., Dept. ST, 5900 Northwest Highway, Chicago 31, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Solenoid Electric Valves

. . . pressures to 3000 psi



Atkomatic solenoid electric valves for high pressure lines are made in sizes from ½-inch to 1½ inches for pressures to 3000 psi. Valve maintenance is held to a minimum by the design which calls for only three moving parts and no external link-

MART DOG FANCIERS demand a pedigree!

RT HOB BUYERS DEMAND A
LGRAPH* CHART

TOOLGRAPH Chart shipped with every Illinois Works Hob is an electrically produced inspection l . . . positive, not subject to human error . . . ives hob buyers visual proof of accuracy. And nore, the TOOLGRAPH Chart is a *useful* record of specific hob characteristics that will help assure peak production performance.

Yes, like a champion's pedigree, the TOOLGRAPH Chart actually proves the value of an Illinois Tool Works Hob! It's typical of the many *plus* values that design ingenuity, metallurgy, production skill and experience add to every Illinois Tool Works Tool.

That's why smart hob buyers like the TOOLGRAPH Chart . . . and specify Illinois Tool Works Hobs!

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TOUGHNESS • HARDNESS • STRENGTH

WHELCO M

OIL HARDENING TOOL STEEL

WL offers *"Whelco"* M—a tool steel of maximum toughness, hardness and strength—a steel to assure maximum results at low cost! *"Whelco"* combines great penetration of hardness, great toughness at high hardness, wide hardening range, fine grain structure, and desirable non-deforming characteristics. *"Whelco"* has good forging properties and is readily machinable in the annealed condition. All WL warehouses stock *"Whelco"* M tool steel in a wide variety of flats and squares. Call your nearest WL man for a trial order—the results will speak for themselves!

WL *steels are metallurgically constant. This guarantees uniformity of chemistry, grain size, hardenability—thus eliminating costly changes in heat treating specifications.*

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book, indicating your title and company identification. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.

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NEW PRODUCTS and equipment

age. Packless construction is another low maintenance factor.

These valves can be used for any applications where media are not harmful to bronze or stainless steel. Coil housings for various conditions are offered in dust-tight, water-tight or explosion-proof housings for hazardous atmospheres. Atkomatic Valve Co., Dept. 227 ST, 545 Abbott St., Indianapolis 25, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Mechanical Drum Handler

. . . moves, tiers sans pallets

This drum handler is a mechanical attachment that engages, transports, places and tiers drums without use of pallets or dunnage. Mechanical operation makes hydraulic hoses or extra controls unnecessary. It handles drums of any di-

ameter or height, regardless of bead or rim size.

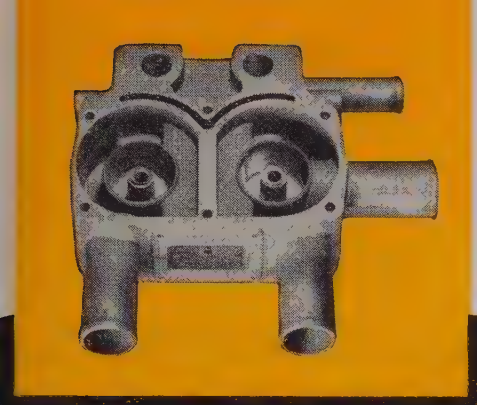
Jaws are adjustable from 35 to 14 inches, handle material without damage. The attachment weighs less than 75 pounds without adapter and one man can attach it in a few minutes. Lewis-Shepard Products Co., Dept. ST, Watertown, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

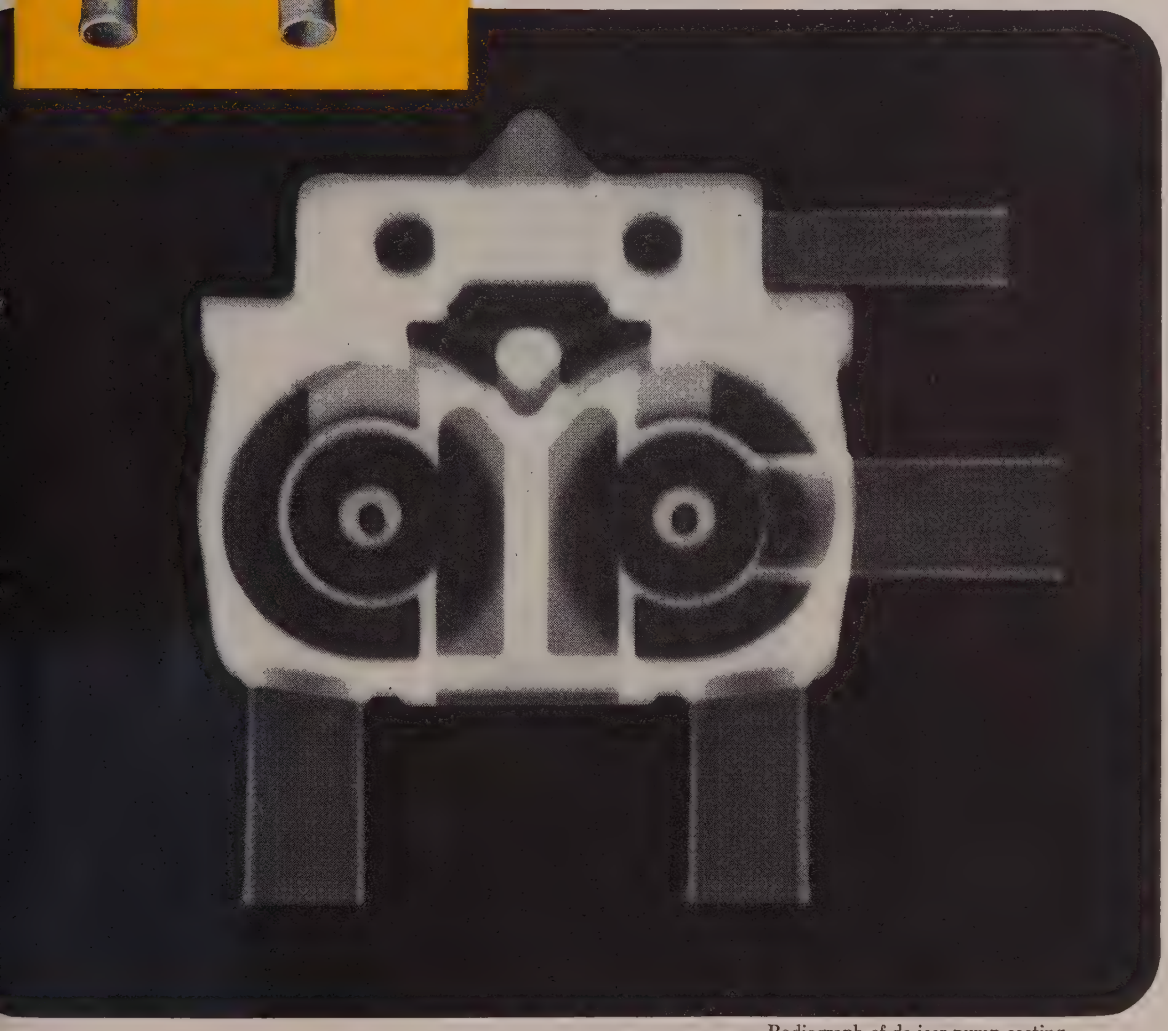
Pressure Switch

. . . in explosion-resisting case

A pressure switch in an explosion-resisting enclosure for water pumps and air compressors is applicable to conditions where explosive atmospheres are present or highly combustible fuels must be handled. The water pump switch has a 20 to 80 psi pressure range. The air compressor switch has a



This heart must pulse or the Plane's in trouble—



Radiograph of de-icer pump casting

so it's checked by RADIOGRAPHY

ICE can down a plane as sure as flak. So it's kept from wing-edge and prop by the throbs of this pulsating heart.

Easy to see the importance of this tiny unit—and why its castings must be sound. To make certain, each part is x-rayed. This way weakness cannot lurk in a hidden flaw.

What's more—a part so finely finished calls for careful machining, which would be wasted if x-rays did not first reject any unsatisfactory castings.

It's another example of why more and more suppliers of castings use radiography. It speeds the establishment of proper casting technics and lets you be sure only sound castings are delivered.

If you'd like to know how radiography can improve your operations, get in touch with your x-ray dealer. Or, if you like, write us for a free copy of "Radiography as a Foundry Tool."

EASTMAN KODAK COMPANY
X-ray Division, Rochester 4, N. Y.

Radiography...

another important function of photography

Kodak
TRADE-MARK

When you want
high impact strength
for your heavy duty jobs

When these shovel jaws swing open, tons of rock and earth pound every welded joint of this truck body. Only weld metal of the highest impact strength can absorb the punishment.

You can depend on Arcos Low Hydrogen Electrodes for *all* of your high tensile welding applications—not just jobs like this that require maximum ductility and impact strength. The rigid Arcos quality controls assure you weld metal of consistently superior physicals. The wide selection of Arcos grades enables you to pick the right electrode for every job. Send today for your free copy of "The ABC's of Welding High Tensile Steels". Arcos Corporation, 1500 South 50th Street, Philadelphia 43, Pennsylvania

ARCOS GRADE	A. W. S. SPEC.
Tensilend 70	E7016
Tensilend 100	E10016
Tensilend 120	E12015
Manganend 1M	E9015
Manganend 2M	E10015
Nickend 2	E8015
Chromend 1M	E8015
Chromend 2M	E9015

WELD WITH ARCOS
LOW HYDROGEN ELECTRODES

40 to 200 psi range. Operating mechanism is of positive snap-action type. Square D Co., Dept. ST, 4041 N. Richards St., Milwaukee 12, Wis.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Magnetic Sheet Separator

. . . stacked steel ends fan out

Device that separates steel sheets of any shape employs the magnetic principle that like poles repel. A permanent magnet induces a magnetic field in the stacked sheets and causes ends of the sheets to fan out with air space between.

Separator will float each sheet, no matter what the coating on the

steel. It is completely self-contained, requires no outside connectors. Four standard models are available to handle sheets 20 gage and lighter up to sheets heavier than 12 gage. Basco Mfg. Co., Dept. ST, 5 Woodside St., Stamford, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

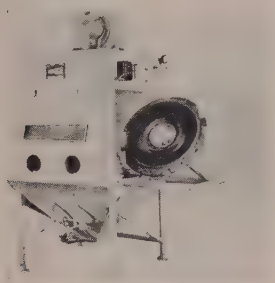
Liquid Abrasive Blaster

. . . 60 to 5000 abrasive screen

Redesigned Jet Blast liquid abrasive blasting machine cleans, finishes, burrs, blends or etches a wide variety of dies, molds, tools and other parts. Siphon injection draws up the liquid slurry and propels it from the blasting nozzle by high velocity air stream. The only moving part within the cabinet is the blower used to ventilate the cabinet.

Blaster handles abrasives ranging from 60 to 5000 standard screen size. Reversible pump located beneath the cabinet effects complete slurry changeover in less

than 5 minutes. Method that maintains slurry in suspension permits high concentration of abrasive at point of work. Particle size, concentration in solution, distance between nozzle and work, and air



pressure can be varied to produce desired results. Sharp edges are retained; metal removal can be held to 0.0001-inch. R. W. Renton & Co., Dept. ST, 754 Addison Rd., Cleveland 3, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Threaded Terminals

. . . screw into proper size hole

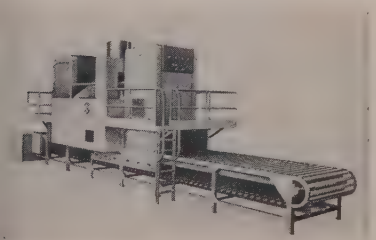
Three models of electrical feed through terminals with threaded bushings are for use where soft soldering cannot be used. They are easily screwed into corresponding size threaded holes or inserted through a hole in light gage material and pulled tight with a jam nut. Fusite Corp., Dept. ST, 6000 Fernview Ave., Cincinnati 13, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Dielectric Core Dryer

. . . no chilling on metal plates

Dielectric Foundromatic core dryer handles cores up to 800 pounds on metal plates, as well as in some metal dryers, eliminating



cost of changeover to plastic dryers. Unit consists of a 60-kw output heater mounted on the oven.

The manufacturer reports cores

How to get
top weld strength
at elevated temperatures

You'll certainly agree there's no room for error in fabricating the engines of today's high flying jets. Every welded part must be of top strength and offer maximum resistance to extreme heat.

Arcos Stainless Electrodes, which provide this peak performance in fabrication of jet engines, can give you the same high performance on *all* your welding applications. Use ARCOS STAINLESS ELECTRODES! They are your assurance that physically, chemically, and metallurgically you can get sound, dependable weld metal on every job. That saves worry and troubles later. And Arcos Quality Controls—most rigid in the industry—guarantee a better investment of your welding time and dollars. Write today for your free copy of "Electrode Selection for Welding Stainless and Alloy Steels". Arcos Corporation, 1500 South 50th Street, Philadelphia 43, Pennsylvania

WELD WITH ARCOS
STAINLESS ELECTRODES

Polaroid's "picture-in-a-minute" camera depends on BRASS

Snap the shutter on the famed Polaroid *Land* camera and a minute later you can have the processed, finished print.

When the Polaroid camera goes into action, a lot of precision-made brass parts go along with it. Each is of the composition, form, temper and finish most suitable for the purpose. Each contributes its share to a longer service life because of its durability, and its resistance to wear, fatigue and corrosion.

Little wonder that so many instrument makers depend on Brass...with so much of it from the mills of The American Brass Company. 5388

THE AMERICAN BRASS COMPANY
General Offices, Waterbury, Conn.
In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

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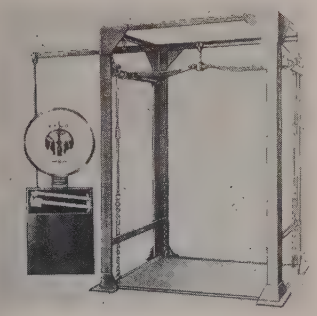
on metal plates are cured successfully in a dielectric field when metal plates are heated to predetermined temperatures. By introducing supplementary means of heating plates after green cores are placed on them, fast complete cure is gained. The model is rated at 3000 pounds of cores per hour, at 3 per cent moisture. General Machinery Division, Allis-Chalmers Mfg. Co., Dept. ST, Milwaukee 1, Wis.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Suspension Platform Scale

. . where no pit is possible

This overhead suspension platform scale is valuable when impossible to install a dormant platform. Where it is impossible to recess even the overhead suspension platform, ramps can be supplied that permit loads to move on and off



easily. The scale can be furnished with or without the angle support stand.

Dial head is a moistureproof, completely sealed swivel. Dial mechanism is designed to provide high accuracy in heavy duty service. All major dial parts are mounted on fixed centers, cannot be thrown out of alignment by shock loading. Detecto Scales Inc., Dept. ST, Park Ave. & Sanford St., Brooklyn, N. Y.

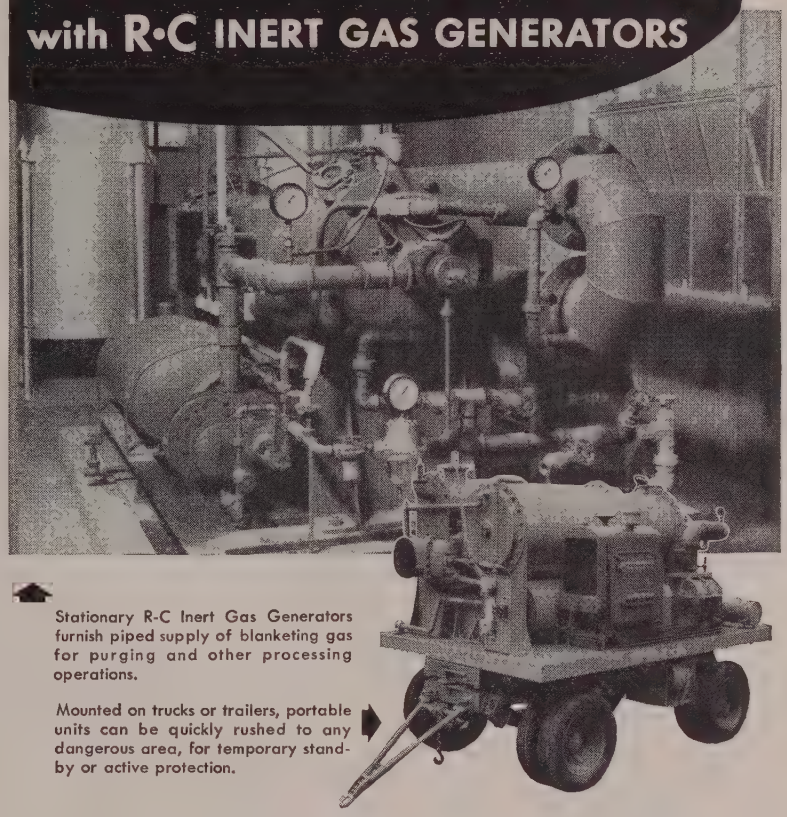
FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Self-Cleaning Strainer

. . removes fine particles

This strainer removes fine suspended particles from raw or process water and disposes of them in an automatic self-cleaning manner. Made in 2 to 36-inch pipe line sizes,

REDUCE EXPLOSION RISKS with R·C INERT GAS GENERATORS



Stationary R-C Inert Gas Generators furnish piped supply of blanketing gas for purging and other processing operations.

Mounted on trucks or trailers, portable units can be quickly rushed to any dangerous area, for temporary stand-by or active protection.

Where materials or processes may cause explosion-produced fires, such hazards can be greatly lessened by stand-by R-C Inert Gas Generators.

From stationary or portable units, a continuing flow of inert gas will blanket dangerous areas or can be used for purging explosive gas or liquid lines. Using either oil or gas as fuel, they operate at very low cost. Frequently, the comparatively small investment can be absorbed by more favorable insurance rates.

Units are available in capacities from 1,000 cfh to 50,000 cfh, with characteristics to match specific requirements. Write for details on how your fire and explosion risks may be reduced with R-C Inert Gas Generators . . . built by the specialists in equipment to handle gas and air.

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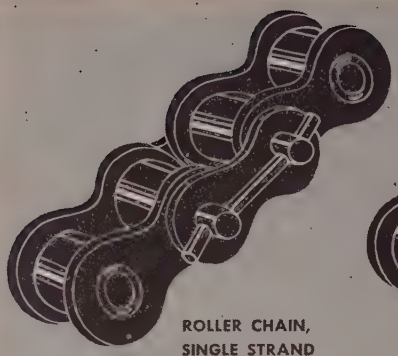
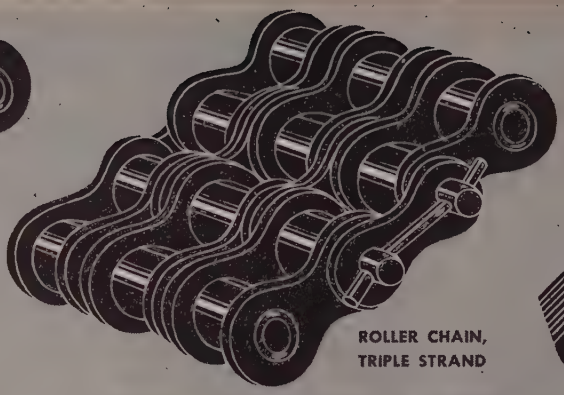


ROLLER CHAIN,
SINGLE STRAND

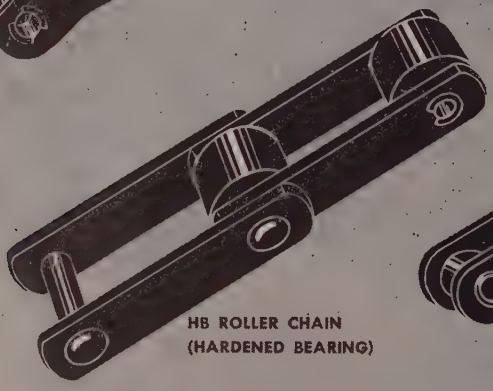


ROLLER CHAIN,
TRIPLE STRAND

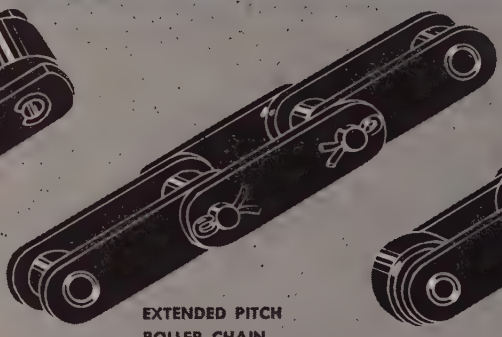
SILENT CHAIN

IT'S A FACT

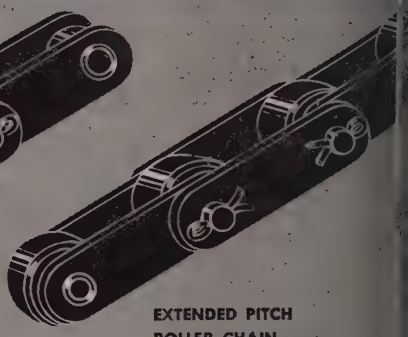
BRIDGE CHAIN



HB ROLLER CHAIN
(HARDENED BEARING)

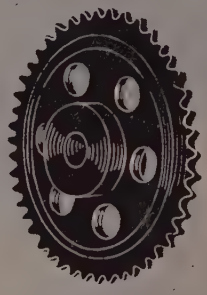


EXTENDED PITCH
ROLLER CHAIN
STANDARD DIAMETER ROLLERS



EXTENDED PITCH
ROLLER CHAIN
LARGE DIAMETER ROLLERS

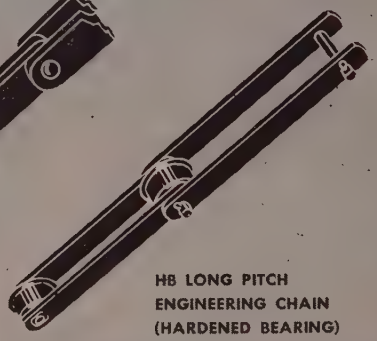
APRON CONVEYOR STYLE A



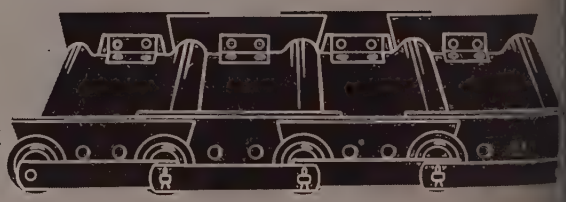
ROLLER CHAIN
SPROCKET

DRIVE AND CONVEYING
CHAIN SPROCKET

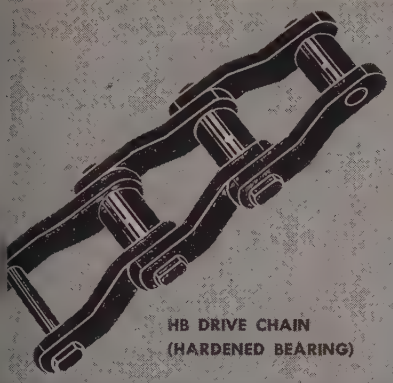
BP CHAIN
(BAR AND PIN)



HB LONG PITCH
ENGINEERING CHAIN
(HARDENED BEARING)

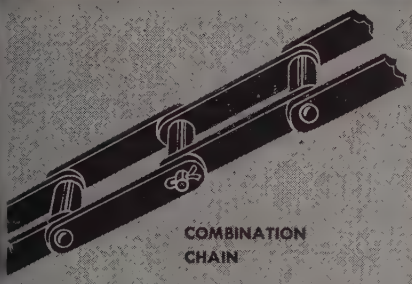


APRON CONVEYOR STYLE B



HB DRIVE CHAIN
(HARDENED BEARING)

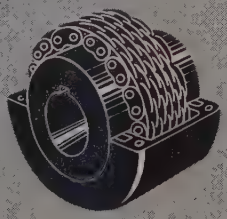
ERE ARE 404 CHAINS
TED IN OUR CATALOGS
D PRICE LISTS



COMBINATION
CHAIN

ROLLER CHAIN
FLEXIBLE COUPLING

NT CHAIN
IBLE COUPLING



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. . . and we will recommend the best one for your job . . .

It doesn't matter to *us* which power transmission or materials handling chain is best for your job but it does to *you*. For almost invariably there is one chain which will perform best and last longer on a given application. And that's the chain we'll recommend. We'll recommend it because we make it.

The thing to remember about UNION is that UNION makes every type of steel chain and attachment for the transmission of power and the mechanical handling of materials. (And nothing else, incidentally. We're complete chain specialists.) So you might well wish to put your next chain assignment in our hands. If you do, you'll get prompt attention from a UNION representative (see list below) or from the home office. *The Union Chain and Manufacturing Company, Sandusky, Ohio.*

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889 Bryant
San Francisco 3, Calif.
Phone: Underhill 3-5010

GEORGIA
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Walton Bldg.
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Phone: Audubon 1364

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Transmission Engineering Co.
Stan Johnson
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Phone: LaSalle 7-2822

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107 Tully St.
Syracuse 4, New York
Phone: 4-8597

Mays & Gleason, Inc.
50 Church St.
New York 7, N. Y.
Phone: Worth 4-2253

Potter & Dugan Inc.
29 Wilkeson St.
Buffalo, New York
Phone: Cleveland 1474

NORTH CAROLINA
M. R. Snyder Co.
304 E. Tremont Ave.
Charlotte 3, North Carolina
Phone: 4-7190

OHIO
Union Chain & Mfg. Co.
F. H. Dalrymple & Frank Smiley
Marshall Bldg.
1211 Public Square
Cleveland 13, Ohio
Phone: Main 1-4925

OREGON
J. W. Minder Chain & Gear Co.
307 S.E. Hawthorne Blvd.
Portland 14, Oregon
Phone: Empire 1131

PENNSYLVANIA
David Davies
P.O. Box 4
Plymouth, Pennsylvania
Phone: 9-1103

Wayne G. Ritter
Ritter Engineering Co.
3031 West Liberty Ave.
Pittsburgh 16, Pa.
Phone: Locust 1-1303

The Union Chain & Mfg. Co.
John A. Shoemaker
32 Rittenhouse Place
Ardmore, Pennsylvania
Phone: Midway 2-8006

TEXAS
Union Chain & Mfg. Co.
J. H. Castleberry & Claude Hall
1334 Fidelity Union Life Bldg.
Dallas 1, Texas
Phone: Randolph 4020

VIRGINIA
C. Arthur Weaver
403 E. Franklin St.
Richmond 19, Virginia
Phone: 2-6649

WISCONSIN
Union Chain & Mfg. Co.
Brad Nelson
Wisconsin Tower Bldg., Rm. 508
606 W. Wisconsin Ave.
Milwaukee 3, Wisconsin
Phone: Broadway 2-4350

SPECIAL REPRESENTATIVES
NEW YORK
E. F. Gahan
500 Fifth Ave.
New York, New York

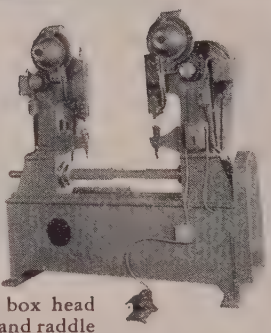
OREGON
Union Chain & Mfg. Co.
W. D. Hollingworth
Room 400, Concord Bldg.
208 S.W. Stark St.
Portland 4, Oregon
Phone: Atwater 9211

THE UNION CHAIN AND MANUFACTURING COMPANY
Sandusky, Ohio, U.S.A.

Speed Production.. Automatically with T-J

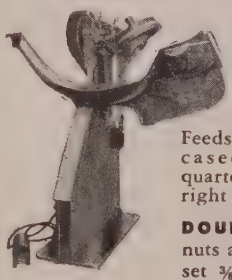
RIVITORS

T-J RIVITOR used for automotive clutch plate assembly. Saves time and labor doing a four-fold job—assembling, setting, inspecting and ejecting.

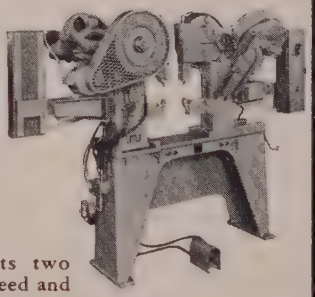


DOUBLE RIVITOR sets two rivets at a time! Equipped with 10″ hoppers, and tooled to automatically feed and set two ¼″ diam. x ⅝″ long wagon box head rivets at a time in elevator chain and raddle or elevator flight assemblies for farm implements. Controlled by one foot pedal.

CLINCHORS



T-J CLINCHOR . . one of six special 8″ throat Underfeed Clinchors used by a large automotive body manufacturer. Feeds and sets 11/16″ square cased nuts in outside quarter panels, left and right hand.



DOUBLE CLINCHOR sets two nuts at once! Tooled to feed and set ⅜″ x ½″ x 1/16″ thick Fabri-Steel nuts at each operation. Both Clinchors tripped by same foot-operated valve. Adaptable to wide range of clinch nut setting problems.

Boost production . . . save labor with T-J Rivitors and Clinchors for many assembly jobs today . . . in aircraft, automotive, farm machinery, stampings of all kinds.

T-J CLINCHORS set clinch nuts 3 to 5 times faster! Fully automatic . . . controlled by a single foot pedal! Available in Underfeed and Gravity feed models, throat depths 8″ to 36″.

T-J RIVITORS automatically feed and set solid rivets . . . with high production! Electrically-powered Rivitor sets 1/16″ to ¼″ diam. solid steel rivets up to ⅞″ long. Air-powered Rivitor sets aluminum alloy rivets up to ¼″ diam. or steel rivets up to ⅛″ diam. and up to ¾″ long. Throat depths 8″ to 36″.

Write for Clinchor bulletin 847; Rivitor bulletins 646 and 847. The Tomkins-Johnson Co., Jackson, Mich.

37 YEARS EXPERIENCE T-J

TOMKINS-JOHNSON

RIVITORS...AIR AND HYDRAULIC CYLINDERS...CUTTERS...CLINCHORS

the strainer consists of a rotating drum into which straining elements are retained. Drum is mounted on a vertical shaft and housed in a cast iron body. S. P. Kinney Engineers Inc., Dept. ST, 201 Second Ave., P. O. Box 445, Carnegie, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Heavy-Duty Dehumidifier

. . . no chemicals or ducts

Self-contained heavy-duty dehumidifier removes excess moisture from plant, storage or laboratory while requiring no installation except an electric outlet. No chemicals, ductwork or air outlets are necessary. For drainage, the unit can be placed over an existing floor

drain, or simple containers can be used for water collection. It can be hooked up to a drainage system and can be caster-mounted for mobility.

These dehumidifiers are recommended for operation at 60 to 110° F room temperature and 40 to 100 per cent relative humidity. Air Conditioning Division, Remington Corp., Dept. ST, 47-59 E. Court St., Cortland, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

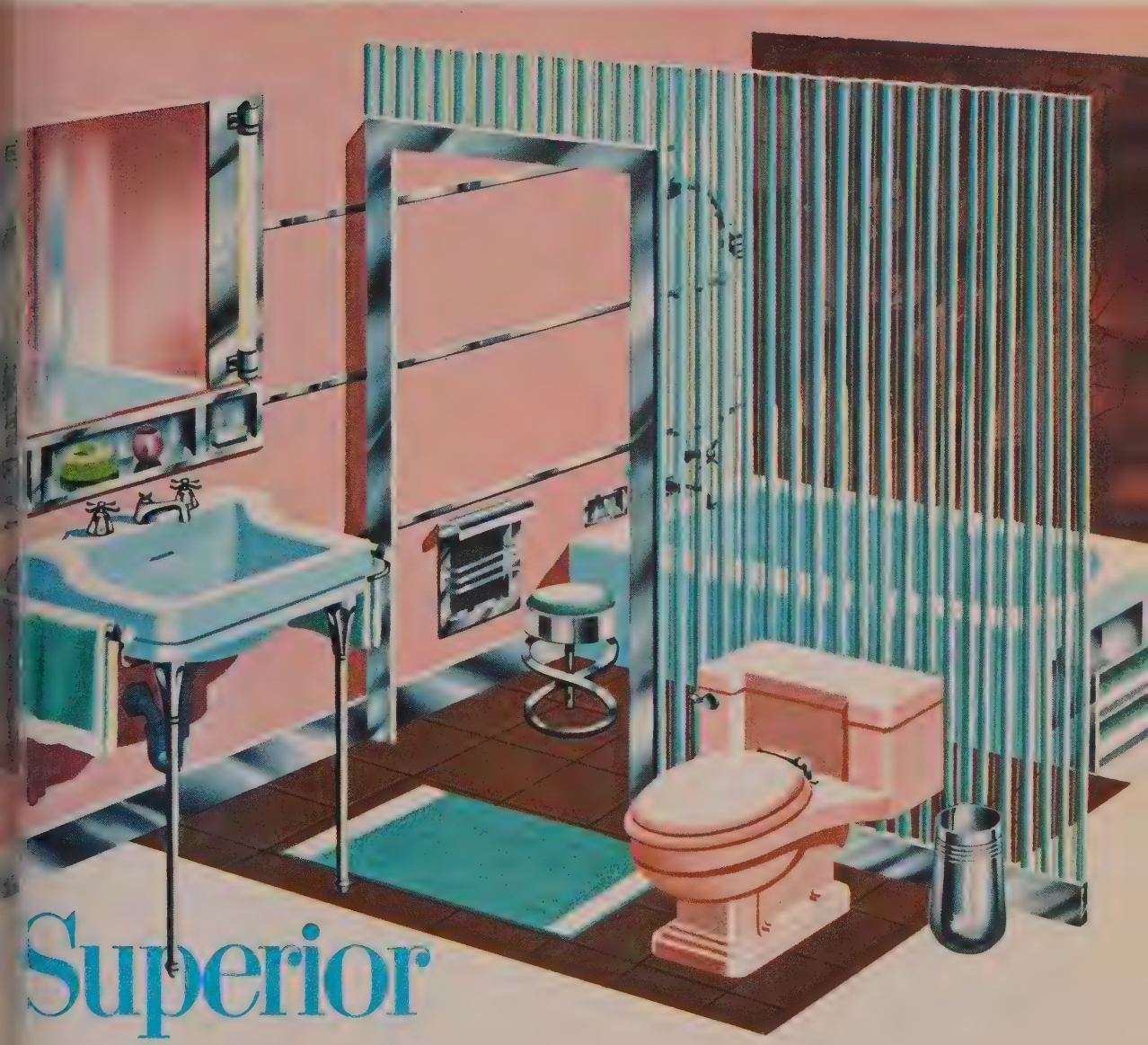
Slide Seal Coupling

. . . push-pull connection

Simple push-pull action means instant connection and disconnection of fluid-carrying lines. Motion with the slide seal coupling is similar to that used when inserting or removing a plug from an electrical outlet.

The coupling consists of two uncomplicated two-piece die cast

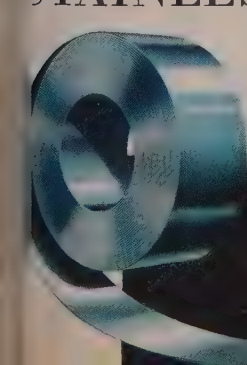
Beauty *at work*... in today's bathrooms



Superior

TYPE 430 STAINLESS STRIP STEEL

The luster of Superior 430 Stainless Strip Steel conveys more than sparkling beauty in the bathroom. Its brilliance speaks of triumph over rust and corrosion, where dampness and moisture abound. • Superior 430 Stainless Strip Steel is your ideal choice for fixture fabrication. Its *work-ability* is outstanding. Its brilliant luster, ease of cleaning and strength in service are most desirable sales advantages.



Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

Do you have a tough moisture-corrosion problem?

Our 430 Stainless is available in easy-handling coils. Let us serve you!

NICHOLSON FILES *for every purpose*

SOLD THROUGH INDUSTRIAL DISTRIBUTORS

The right file for the job and Twelve perfect files in every dozen. . . . Through four generations of Nicholsons these two keynotes have been interwoven with the aims and policies of America's foremost file manufacturer. Here they have inspired every development in file engineering; guided every stage of file manufacture; spearheaded every phase of service to the industrial user. They definitely lead to better work, higher production, lower filing costs. Thousands of kinds, cuts and sizes. Examples:

⬅ REGULAR PURPOSE FILES

(1) **MILL**—for smoothing, edge sharpening, large-tooth saw filing.

(2) **TAPER**—Regular, Slim, Extra Slim, Double Extra Slim types—for sharpening hand saws.

(3) **FLAT.** (4) **HALF ROUND.** (5) **ROUND.** (6) **SQUARE.** (7) **PILLAR.** (8) **KNIFE.** (9) **THREE SQUARE.** Mostly double cut—for fast stock removal.

(10) **WOOD RASP**—Flat and Half Round types.

SPECIAL PURPOSE FILES ➡

(11) **G. P. MACHINIST'S**—a special file combining the "General Purpose" principles of both regular Mill and Flat files to give metal-removing speed with smooth finish.

(12) **SUPER-SHEAR**—a patented curved-tooth file with teeth in off-center arcs, for roughing and smoothing in one operation. Serrations break up filings.

(13) **CURVED TOOTH**—rigid tanged type for filing flat surfaces. Flexible type (with holder, not shown) for concave and convex surfaces as well as for larger flat areas.

(14) **LEAD FLOAT**—has coarse, short-angle "blade"-like teeth which shear or "float" away metal. For lead, copper and other soft materials.

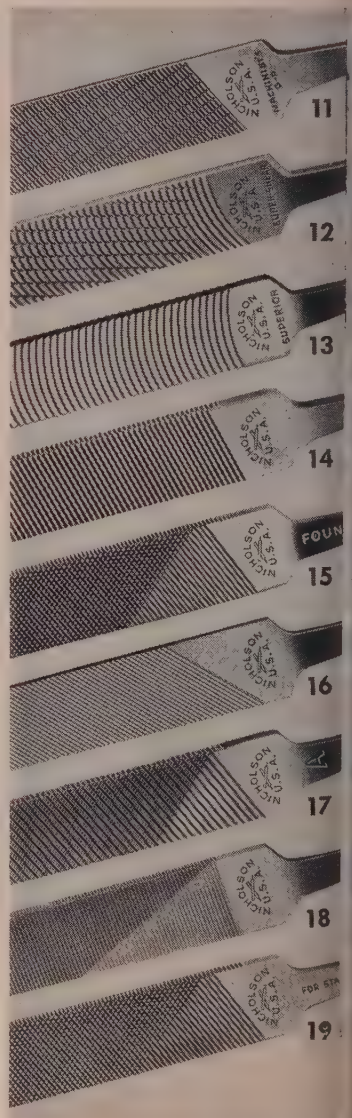
(15) **FOUNDRY**—has extra-rugged teeth to resist breaking out. For fast metal removal on castings.

(16) **LONG ANGLE LATHE**—teeth cut for chip clearing and clean shearing—for fast, smooth finishing.

(17) **ALUMINUM TYPE "A"**—special serrated-tooth and "open-throat" cut, to prevent clogging. For aluminum and other ductile metals.

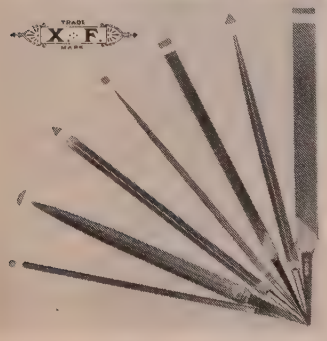
(18) **BRASS**—short-angle "upcut" teeth prevent file running off work and help keep gullets clear of chips. Long-angle "overcut" breaks up filings.

(19) **STAINLESS STEEL**—special-shape teeth to withstand high abrasive action of stainless steel's tough chromium carbides and nickel alloy.



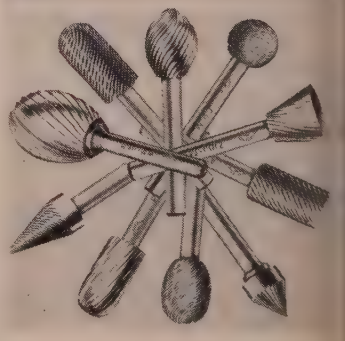
X. F.* SWISS PATTERN FILES

⬅ Hundreds of shapes, cuts and sizes for hand and machine filing of precision tools, dies, fine instruments—all sorts of delicate and intricate pieces. Made to more exacting measurements than American Pattern files—with smaller points, longer tapers, finer cuts. **X.F.* means Extra Fine.*



ROTARY FILES

All popular shapes and head sizes in (1) *Hand-Cut Hi-Speed Steel*, (2) *Ground Burs Hi-Speed Steel*, and (3) *Ground Burs Carbide;* in both ¼" and ⅛" shanks. Accurate cuts and peripheries, true-centered shanks—Nicholson superior quality throughout. ➡



NICHOLSON FILE COMPANY
71 Acorn St., Providence 1, R. I.
(In Canada, Port Hope, Ont.)

the difference in cleaning results is WHEELABRATOR®

AIRLESS BLAST CLEANING

TIME SLASHED IN HALF
14 MAN HOURS SAVED DAILY

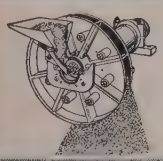
Continental Gin Co., Prattville, Alabama has found there is a big difference in cleaning room efficiency using the airless Wheelabrator. Although the tonnage of gray iron castings cleaned daily is relatively small—only 8 tons—the savings effected are worthwhile. They replaced FOUR tumbling mills with ONE 66" Wheelabrator Swing Table and cut their cleaning time in half.

The speed and versatility of the Swing Table—which will rapidly clean anything which will fit on the work table—enabled a reduction of 58% in labor. All cleaning is accomplished in 5 hours time. With the tumbling mill set-up 24 man hours were needed due to time-consuming sorting, loading and unloading operations.

Mr. J. N. Buckner, Gen'l Supt., says he "would not trade the Wheelabrator for any other method known." It produces a cleaner product, simplifies inspection for surface flaws, improves working conditions and requires less floor space.

Like to know how this profitable difference in cleaning results can be duplicated in your foundry? Wheelabrator engineers will make a thorough survey of your problem recommending the size and type equipment for your application. Such a survey costs you nothing—and may save you a great deal.

Write or call for details today.



WHEELABRATOR— The perfected airless centrifugal blast unit pioneered by American slashes cost and cleaning time. Conserves power, labor, space. Cleaning perfection results in longer tool life, faster machining and grinding, easier inspection.

American
WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Indiana

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST CLEANING EQUIPMENT

Fort Pitt Bridge

EXPERIENCED FABRICATORS AND ERECTORS OF

STRUCTURAL STEEL

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Steel Permits Streamlining Construction with Safety, Endurance and Economy

Why not take advantage of this broad experience and specialization on your next *structural steel project?*

AISC — American Institute of Steel Construction, Inc. — Founded 1921

Fort Pitt BRIDGE WORKS

Member American Institute of Steel Construction

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aluminum assemblies with rubber O rings. A spring-actuated locking device holds each half in the coupled position to permit full fluid flow. Pressure on the lock lever separates the coupling halves which then can be disconnected

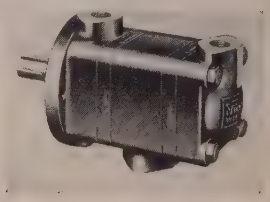
completely by a slight pull. When fully disconnected, each coupling half forms a perfect seal. The couplings can be used with a wide range of hydraulics, oils, fuels or water. Aeroquip Corp., Dept. ST, Jackson, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

Double Pump Series

. . . provides independent system

Two double pumps, series V-2200 and V-3200, serve in mobile applications where two independent hydraulic power sources are required. Each series consists of two vane-type pumps in a single housing, driven by a common shaft. This



provides required independent systems, saves space and costs.

Pumps are applicable to materials handling equipment and for power steering applications in addition to the usual functions. In series V-2200, ten pump sizes are available, with any combination of 2, 5, 8 or 11 gpm delivery units. Series V-3200 is made in sixteen sizes, with a choice of 2, 5, 8 or 11 gpm at the small end and 12, 15, 18 or 24 gpm at the other. Splined, threaded or straight keyed shafts

for POSITIVE DESCALING of...

- **STEELS—ALL TYPES**
  - **CAST**
  - **CHROME STAINLESS**
  - **CHROME-NICKEL STAINLESS**
  - **HIGH SPEED**
  - **SILICON**
- **NICKEL**
- **INCONEL**
- **SILVER**
- **COPPER**
- **STELLITE**
- **COBALT BEARING ALLOYS**
- **MONEL**
- **TITANIUM AND ITS ALLOYS**

—and all other metals not affected by fused caustic at 700°F.

DU PONT SODIUM HYDRIDE DESCALING PROCESS—

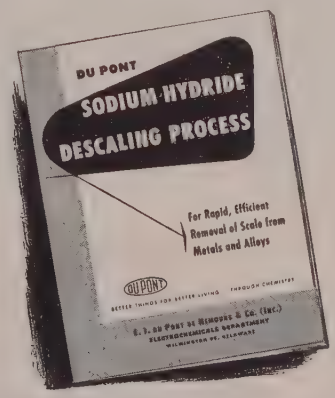
fast, efficient and easy to operate!

Just *one* fast treatment in the hydride bath is all it takes to reduce oxide scale from any of a great variety of metals and alloys. Bath action *stops* the instant scale is reduced—preventing pitting or base metal loss even if work is left in bath longer than necessary.

The flexible design of hydride installations makes the process adaptable to shops and mills of any size. Equipment can be manually operated, conveyorized or continuous, and treatments can be carried out on finished articles or processed stock of all sizes and shapes. The process is *easy* to operate and maintain—*skilled hands are unnecessary.*

If your operations call for the descaling of "hard to clean" metals, be sure you get all the facts about Sodium Hydride Descaling from Du Pont—the pioneer of this remarkably efficient process. We can show you how you can use Sodium Hydride Descaling *profitably*—even help with the design of the installation and the training of the operators. Get in touch with the nearest Du Pont office or send in the coupon below.

NEW, REVISED BOOKLET gives you up-to-date information about the Du Pont Sodium Hydride Descaling Process: advantages, applications and equipment used. SEND FOR YOUR COPY.


DU PONT
SODIUM HYDRIDE
DESCALING PROCESS
For Rapid, Efficient Removal of Scale from Metals and Alloys
DU PONT
BETTER THINGS FOR BETTER LIVING THROUGH CHEMISTRY
E. I. du Pont de Nemours & Co. (Inc.)
ELECTROCHEMICALS DEPARTMENT
WILMINGTON 98, DELAWARE

DISTRICT AND SALES OFFICES: Baltimore • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • Kansas City* • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco **Barada & Page, Inc.*

DU PONT

Sodium hydride process for positive descaling

DU PONT
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BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department, Wilmington 98, Delaware

Please send me more information about the Du Pont Sodium Hydride Descaling Process: advantages, applications, equipment used. I am interested in descaling_____

_____

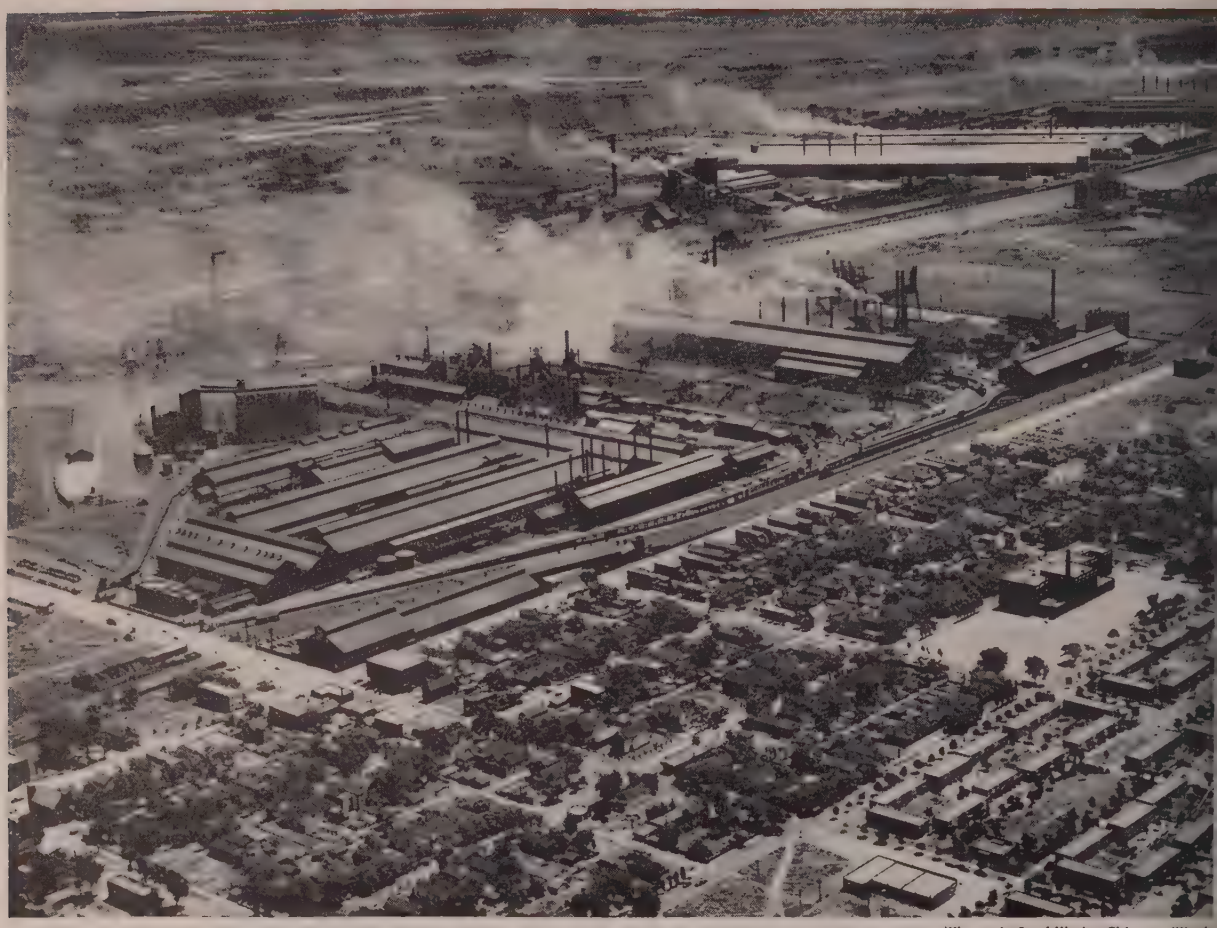
*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

WISCONSIN STEEL



Wisconsin Steel Works, Chicago, Illinois

ALLOY AND CARBON STEELS SULFITE-TREATED STEELS SPECIAL STEELS

HOT-ROLLED BAR MILL PRODUCTS
Rounds—Squares—Flats—Bar-Size Angles and Channels—Spring Steel and Special Sections

HOT-ROLLED STRIPS

STRUCTURAL SHAPES
Angles, Channels and Special Sections

COLD-FINISHED PRODUCTS
Alloy and Carbon Rounds

PLATES Universal Mill

ANNEALING—HEAT TREATING AND MACHINE STRAIGHTENING FACILITIES

PIG IRON—Basic and Malleable

WISCONSIN STEEL COMPANY

AFFILIATE OF INTERNATIONAL HARVESTER COMPANY

INTERNATIONAL HARVESTER

180 NORTH MICHIGAN AVENUE, CHICAGO 1, ILLINOIS

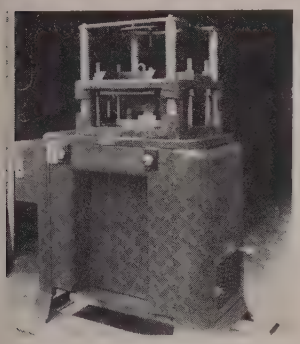
nd face, flange or foot mountings re available. Vickers Inc., division of Sperry Corp., Dept. ST, 400 Oakman Blvd., Detroit 32, lich.

OR MORE DATA—CIRCLE REPLY CARD NO. 22

Automatic Stamping Trimmer

. . . square-trims stamping flanges

Four-slide single rotary cam machine square trims flanges of drawn tampings. Machine strokes ¼-ich horizontally in four different irections, each stroke at 90 degrees to the preceding stroke after



op ram is down solidly on the learance blocks.

Standard machine has a 10-inch losing stroke and trims flanges f shells 5 inches or less in depth. elatively simple dies can be hanged in 30 to 90 minute per set-p. Punch mounting plate is driv-n by a 7½-hp motor. The top am is operated by two 8-inch di-meter air cylinders. Standard achine cycle time is about 4 sec-nds. Model Trimmer Inc., Dept. T, Columbus, Ind.

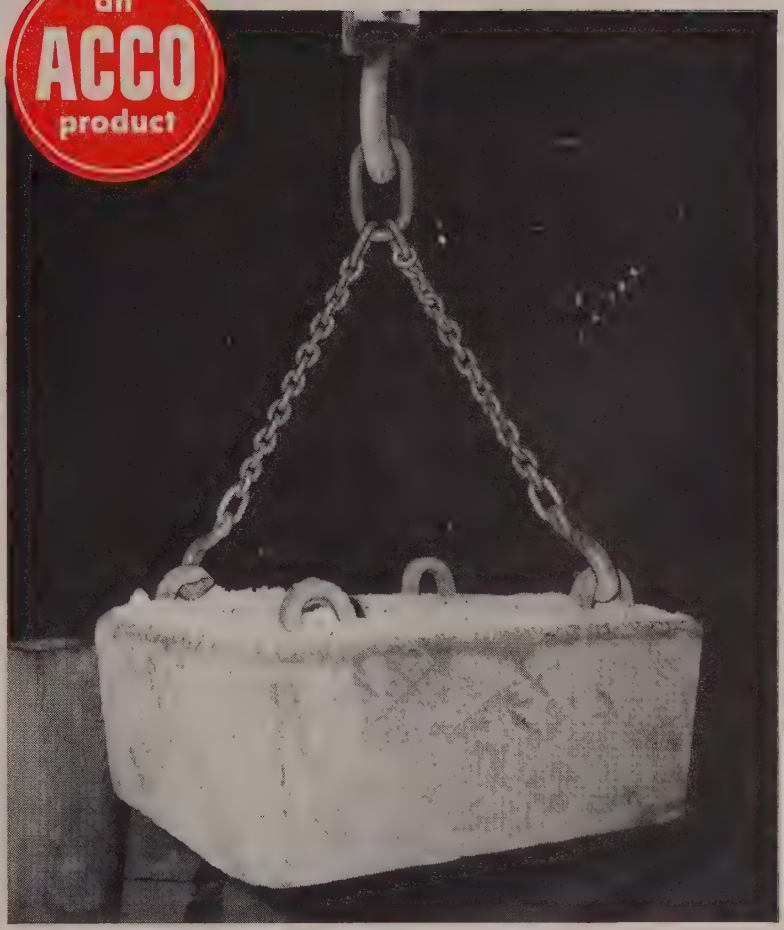
OR MORE DATA—CIRCLE REPLY CARD NO. 23

Centrifugal Pumps

. . . for all type liquids

Models VBH, VD and VE seal-ess type pumps have been added o the company's standard line. uitable for pumping practically ll types of liquids not too viscous r too corrosive for modern cor-osion resistant alloys, pumps are daptable to both continuous and ntermittent pumping operations. Each model is available in sizes rom 1/20 to 5 hp. Pioneer Pump, ivision of Detroit Harvester Co.,

an ACCO product



Why Workmen Like ACCO Registered Sling Chains

• One rigger said: "It's a neat factory-made unit that we know is made properly." A foreman said: "My men look for the identification ring. It's sort of a safety indicator."

Every ACCO *Registered* Sling Chain is built and tested as a unit and bears the ACCO identification ring. The sling illustrated above has ACCO Foundry Hooks designed for use on casting molds which get very hot. It is engineered for this particular job and will give long service. It is one of the many types of *Registered* Sling Chain made by AMERICAN to handle safely all kinds of lifting jobs.

Check today with your AMERICAN CHAIN distributor who will help you decide on the correct ACCO *Registered* Sling Chains for your use. Or, write our York, Pa. Office for a copy of **DH-314** ACCO *Registered* Sling Chain Catalog.

ACCO

TRADE MARK

AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

American Chain

This is *PRECISION*

A-C Crane Hoist Control

15 Tons of Steel . . . handled as though it weighed a pound. The picture at the right tells the story. A walnut and wrist watch were placed side by side. The operator lowered the 15-ton, full-hook load. The walnut was cracked. Then the load was raised without the least settling action. The watch was left untouched.

That's Precision . . . precision that is attained on all cranes equipped with the new Westinghouse Load-O-Matic Crane Control. In this particular test, the load was lowered with the master switch set at the first point lower. No jogging, inching or retardation was necessary—lowering rate was smooth and steady.

The Load-O-Matic hoists and lowers *all* loads—the empty hook, light or maximum loads—at stabilized speeds. Loads can be brought to a standstill or suspended by action of the motor only

VERNIER CONTROL PROVIDES FLEXIBILITY

Additional flexibility of operation is available with the auxiliary Vernier control. This control component is especially useful for high-accuracy spotting. For example—with full load on the hook and the master switch on the first lowering point, operation of the Vernier provides control from approximately 7% of full speed to standstill. Operator can actually float the load into the desired spot.

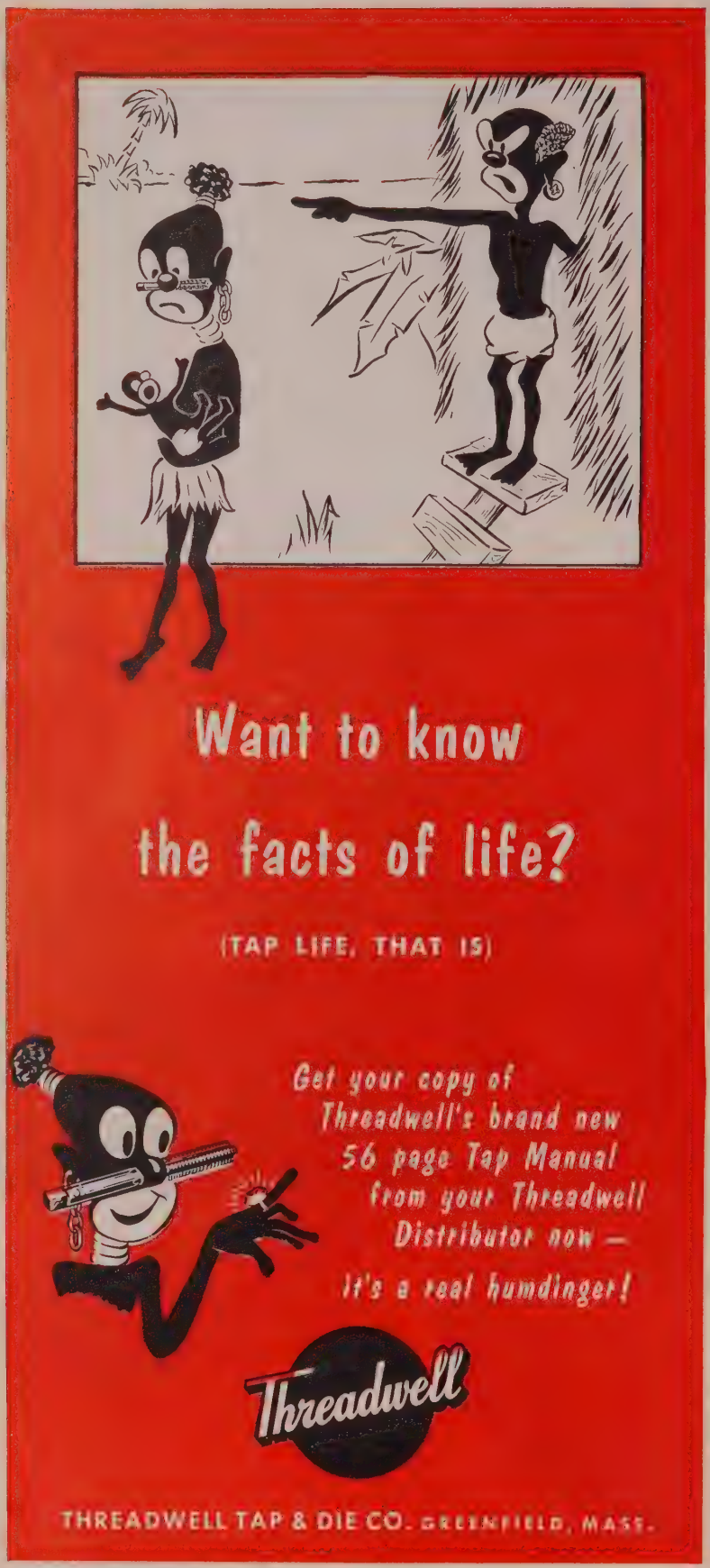
ASK FOR DESCRIPTIVE BOOKLET B-5417

This booklet describes all the operating characteristics and features of the Load-O-Matic a-c crane hoist control. Ask your Westinghouse representative for your free copy, or write direct to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-27015-A

YOU CAN BE **SURE**...IF IT'S

Westinghouse

This simple test of the Westinghouse Load-O-Matic was conducted at a Materials Handling Conference and witnessed by more than 100 engineers. The full load of 15 tons was lowered at an almost imperceptible speed till it cracked the walnut. The watch was not damaged. Then the load was raised without the least settling action.



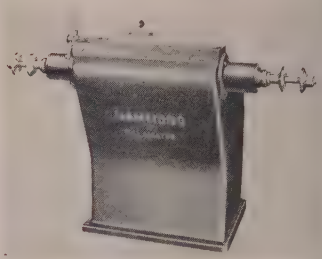
Dept. ST, 19657 John R St., Detroit 3, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24

Polishing, Buffing Lathe

. . . 10-hp, variable speed model

Heavier polishing and buffing lathe, the model 10 VRO has speed range of 1500 to 3000 rpm. Speed can be changed instantly while the lathe is running by turning dial



control. The 10 hp model becomes the largest in the manufacturer's line. Hammond Machinery Builders Inc., Dept. ST, Kalamazoo, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 25

Jig Boring Machine

. . . locates, machines to tenths

Tool room size model 2E jig borer is an addition to the manufacturer's Electrolimit series. With its Electrolimit measuring system and preloaded ball roll quill, the model is capable of locating and machining to tenths. The borer employs two separate measuring units—one for longitudinal, the other for transverse movements. Both are independent of traversing screws.

Each measuring unit obtains basic 1-inch spacing electromagnetically from a solid notched master bar and registers a zero reading on an indicating meter without making physical contact. Fractional inches are obtained by

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?. Rolled Alloys

Michigan Steel Casting Co., Rolled oducts Div.—Contained in 2-page gineering data sheet on Misco Met- Wrought (36% Ni-16% Cr-1¼% heat resisting alloy are tables of emical composition, physical prop- ies, mechanical and high tem- rature properties and recommend- design stresses.

). Scrap Removal Conveyor

May-Fran Engineering, Inc.—Con- uous flow of hot, wet or dry chips, rnings and borings from machines ile they are in operation is pos- le with the Chip-Tote conveyor, scribed and illustrated in 4-page lletin MF-640. Unit eliminates pe- dic shut-down for manual scrap moval.

l. Ram Type Turret Lathe

Morey Machinery Co.—Complete ecifications, design and construc- n features, and available cross des and accessories are covered in page illustrated bulletin 530 on the . 2 ram type turret lathe. This achine has capacity for 1 x 6-in. r work, and spindle speeds are in- itely variable from 60 to 2000 m.

2. Dieing Machines

Emhart Mfg. Co., Henry & Wright v.—60-page illustrated manual Dieing Machines" contains complete ecifications of standard dieing ma- ines with capacities from 25 to 400 ns as well as data on custom-built its of 500 to 2500-ton capacities. atures covered include high speeds, g die life, quick set-up and min- um maintenance, all of which con- bute to low stamping costs.

3. Transformer Laminations

Allegheny Ludlum Steel Corp.—If ur work involves engineering, de- gn, production, purchasing or other ases of transformer production herein laminations are used, you'll interested in 124-page illustrated ndbook entitled "Transformer Lam- inations." In this fifth edition are and engineering information and drawings, core properties, ordering other data on laminations and lami- nated parts.

74. Industrial Trucks

Lewis-Shepard Products Inc.—In 8 illustrated pages, catalog 34 describes two units in Master line of industrial trucks—the Jacklift Electric and Master Jackstacker. Engineering and operating features are covered and engineering drawings, specs and maintenance features are included.

75. Wire Rope Sling Guidance

A. Leschen & Sons Rope Co.—64- pages of practical information on the selection and use of wire rope slings are contained in "Sling and Fittings Handbook" No. FS-52. Charts show proper calculations to be used in de- termining the size of sling required in a given application, the correct sling angles in relation to the load and procedures in applying fittings.

76. Zirconium Properties

Zirconium Metals Corp. of Amer- ica—Although it measures only 3 x 5¼ in., this little booklet contains a wealth of information on the prop- erties of zirconium metal. Among subjects covered are history, methods of manufacture, uses, physical prop- erties, mechanical and chemical prop- erties. Graphs and tables are includ- ed.

77. V-Link Belting

Brammer Corp.—Sizes and prices; advantages of V-link belts compared with endless V-belts; Brammer V- link versus other detachable V-link belting; selection table with power correction factors; and assembly, in- stallation and maintenance instruc- tions are covered in data book 205.

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78. Welding Electrodes

General Electric Co.—Application, chemical analysis and mechanical properties of G-E welding electrodes are found in booklet GED-1634. Also included are an electrode trouble-shooting chart and explanation of AWA nomenclature.

79. Processing Valves

Gas Machinery Co.—"Valves for the Process Industries" is title of comprehensive 50-page manual which shows and describes gate, control, angle, butterfly, reversing, hot gas, check and special valves. Manual, electrical and hydraulic valves are covered.

80. Small Metal Parts

Torrington Co., Specialties Div.—Small precision metal parts listed in 4-page folder include pins and pivots; screwdriver blades; rotary swaged rods, wires and tubing; mandrels for grinding wheels; abrasive points and polishing wheels; perforating punches and tapered or pointed wires and rods.

81. Magnetic Motor Starters

Arrow-Hart & Hegemann Electric Co.—Type RA-V magnetic motor starters with vertical overloads below contactor are described in illustrated 8-page folder 4529. They are made for use especially in new Crouse-Hinds M52 type EPC explosionproof condulets. Uses, design features and other data are included.

82. Measuring Flatness

Crane Packing Co.—The measuring of surface flatness through light band reading is illustrated and described in 6-page instructional bulletin and wall chart. Interpretation of readings is explained. Instructions on care and operation of monochromatic lights and optical flats is also featured.

83. Industrial Filters

Industrial Filtration Co.—Reasons for quenching oil failure are discussed in 4-page bulletin on "Delpark Industrial Filters and Quenching Oil Applications." It illustrates how filters help retain the original flash and viscosity points and minimize excessive oxidation and loss of quenching oil.

84. Continuous-Weld Pipe

Youngstown Sheet and Tube Co.—Weldability, corrosion resistance and high physical strength are combined in Yoloy continuous-weld pipe, the physical properties of which are presented in small descriptive folder.

85. Elevating Tables

Raymond Corp.—Many optional accessories for use with line of hydraulic elevating tables are described in supplementary bulletin 233. Data are given on towing handles, retaining bars, two-speed foot pump, roller top and die separators.

86. Concrete Reinforcement

Wm. F. Klemp Co.—"Instructions for Laying Klemp Hexteel and Floorsteel" is title of well-illustrated 20-page brochure bearing AIA file No. 14-R. How the heavy duty floor armors are laid over new and old concrete, wooden floors, asphalt base or broken or crumbling floors is detailed.

87. Horizontal Band Saws

Wells Mfg. Corp.—Line of horizontal metal-cutting band saw machines as well as special heavy duty saws for unusual cutoff jobs, are described and illustrated in 12-page catalog G-52. Included is a reference chart for selection of proper blade, feed and speed for cutting various materials.

EDITORIAL REPRINTS:

88. Atom Power in Industry

In STEEL reprint, "The Facts About Atomic Power in Industry", Dr. A. G. Gray, Technical Editor, summarizes the immediate as well as future possibilities of using atomic power in industry. He points out that an atomic reactor is already delivering electric power on an experimental basis, but that industry itself has a big job to do if it is to cash-in on the potentialities of atomic power and radioisotopes.

89. Carbide Tipped Drills

Tips brazed to drills help make production roll at Hercules Motor Corp. Longer life between grinds plus high speeds and feeds result. Material is cast iron for valve guide bushings. The story is in STEEL reprint, "Carbide Steps up Drilling Job."

90. Flicker Control

R. F. Lawrence and R. L. Tremain in STEEL article "Flicker Control in Arc Furnace Power Supply", provide sufficient information to evaluate any reasonable combination of synchronous condenser and buffer reactor and effect of furnace size for any system impedance. Schematics, graphs and equations are offered.

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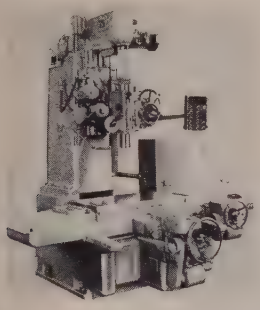
ıoving a small electromagnetic ead by means of a micrometer ead graduated to 0.0001-inch. Pre-ision ball roll quill roll-feeds on 88 precision balls preloaded be-



veen quill and liner with total earing pressure of 6000 pounds. ratt & Whitney, division of Niles-ement-Pond Co., Dept. ST, W. artford 1, Conn.

R MORE DATA—CIRCLE REPLY CARD NO. 26

djustable Tension Lock

. . . for static discharge reel

C & E static discharge reel now atures an external adjustable nsion lock that permits increas-g or decreasing the tension of the ind-up spring. Reel is grounded ırough four electrical paths. A ressure connector automatically reaks contact as soon as force is pplied, preventing damage should perator fail to release cable. Eric-n Mfg. Co., Dept. ST, 5209 Euclid ve., Cleveland 3, O.

R MORE DATA—CIRCLE REPLY CARD NO. 27

unches, Chisels

. . . full range of sizes

Cape, diamond point, round nose id extra long cold chisels and nch bars have been added to the mpany's line. Forged from high ade octagon alloy steel, all are ade in a full range of sizes. J. Williams & Co., Dept. ST, 400 ılcan St., Buffalo 7, N. Y.

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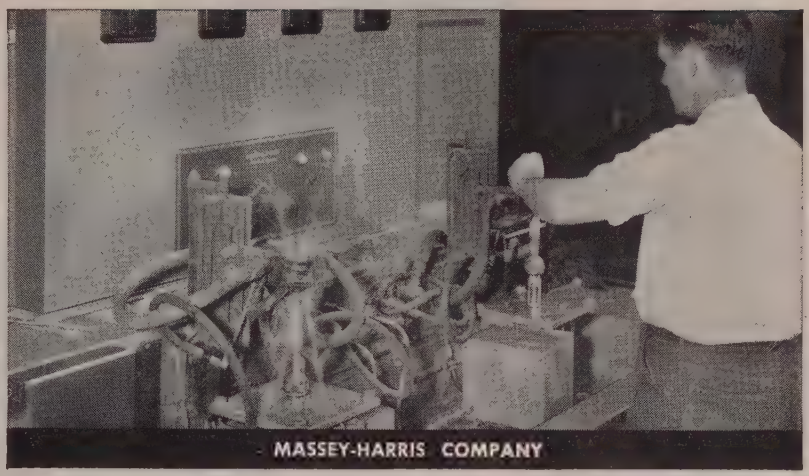
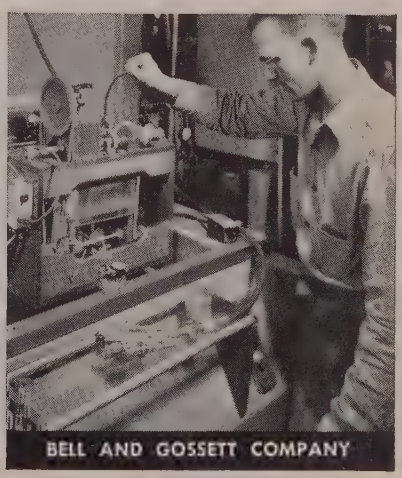


MASSEY-HARRIS COMPANY

across the nation

SEABOARD AIR LINE RAILROAD



BELL AND GOSSETT COMPANY

UP Production with Westinghouse Induction Heating

Production rates upped by 50% to 2000%! Time savings up to 80%! Space savings up to 90%! Figures like these in company after company tell the Westinghouse story. Across the nation, Westinghouse installations are saving time and money—and doing a better job to boot!

What is your heat-treating problem? Hardening? Annealing? Heating? Metal Joining? Westinghouse Induction Heating may be the answer.

For full information write: Westinghouse Electric Corporation, Electronics Division, Department 62-1, 2519 Wilkens Avenue, Baltimore, Maryland.

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J-02262

Helping to make a pipe dream come true

Imagine a steel pipe line big enough for you to crawl through .....spanning mountains, rivers and swamps in the rugged terrain of the Canadian Rockies.....traveling 720 miles to carry oil from Alberta, Canada to the Pacific Northwest.....

This is the pipe dream which Canadian Bechtel Limited is fast making a reality. Known as the Trans Mountain Pipe Line, it will be moving crude oil to Vancouver and Seattle areas by the fall of 1953.

Aiding in the completion of this gigantic project is the dependable delivery of Basalt-Kaiser pipe from California—more evidence of how Kaiser Steel is helping to build a stronger West

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PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • tin plate • hot rolled strip • hot rolled she alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-produc For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YO**

The Market Outlook

THE abbreviated government controls under which you will operate after June 30 are taking shape rapidly.

The controls that will remain on steel, aluminum and copper will be known as the Defense Materials System. It will be in effect a "little CMP," for it is a plan to control a small but important segment of materials. That segment embraces steel, aluminum and copper needed for military and atomic energy programs. Going into these uses are about 12 per cent of all steel, 30 per cent of all aluminum and 20 per cent of all copper. Under the new DMS, mills will have authority to sell to civilian buyers any excess tonnage not taken by defense and atomic energy contractors, but only after lead time has expired.

TAILORED—The new DMS is being devised to provide the only materials controls the Eisenhower administration believes will be necessary after the current Controlled Materials Plan expires June 30.

Rules of the new DMS will be set forth in a single regulation, a sharp contrast with the multitude of regulations issued by the National Production Authority under the present Defense Production Act.

IMMINENT—The new DMS is to be announced by the Office of Defense Mobilization as soon as the regulation has been written; that, according to present schedule, should be Mar. 20. Congressional action on the new system is necessary, but the ODM expects quick approval of it.

When ODM unfolds details of the new DMS it will announce cancellation of all nondefense advance allotments of controlled materials for third quarter.

ONE EXCEPTION—There will be one exception in DMS to the general abandonment of allocations for nondefense purposes. Full allocation will be continued for nickel-bearing stainless steels because of the large number of components made of such material which are required for defense and atomic energy programs.

Continuation of even an abbreviated system of materials control probably would not be necessary if over-all demand were not as heavy as it is.

GAGE OF DEMAND—One gage of the strength of demand for steel is an estimate, on the basis of a poll by STEEL, that the automobile industry will pay close to $215 million in premiums for steel this year if present auto production levels and the current availability of steel remain unchanged. The premiums are those paid for warehouse steel and for conversion steel. The added cost would average $36 per auto produced.

Because of the continued heavy demand for steel, the steel industry produced steel for ingots and castings at the rate of 101 per cent of capacity in the week ended Mar. 14. That matched the record-breaking pace of the preceding week. That rate yields 2,277,000 net tons of steel.

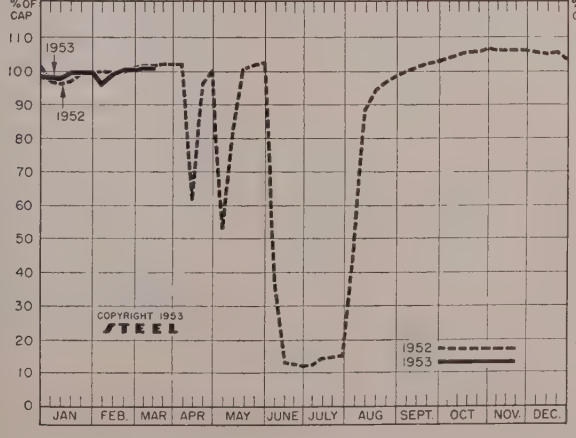
RECORD BOUND—At the pace steel production is going there will be another new monthly record this month. Figures just issued by the American Iron & Steel Institute show the 8,938,000 net tons of steel for ingots and castings produced in February was a record for that month.

The forms of finished steel that have been in strong demand remain in that position. On the basis of current demand for conversion steel, it has been estimated that automakers would have to reduce their output 10 to 25 per cent before there would be any appreciable letdown in regular mill requirements.

TIGHTER PINCH—Military needs for shells are sustaining demand for bars; second-quarter requirements are about 25 per cent above those of the first quarter.

A stepchild of inflation, a price increase on stainless steels was announced last week. The increases —3 per cent on chromium-nickel stainless and 2 per cent on chromium grades of stainless—were permitted under an OPS regulation allowing producers of stainless steel to pass on recent price advances in chromium and nickel.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Mar. 14	Change	Same Week 1952	Same Week 1951
Pittsburgh	107	0*	102.5	88
Chicago	103.5†	0*	105.5	106.5
Mid-Atlantic	97†	+ 1	98	100.5
Youngstown	106	— 1	102	106
Wheeling	100.5†	— .5	100	96.5
Cleveland	104†	0*	98	100.5
Buffalo	106.5	0	104	104
Birmingham	98	0	104	100
New England	89†	+ 4	80	90
Cincinnati	100.5†	— .5	91.5	104
St. Louis	87	— 9	79	97
Detroit	107	+ 1.8	106	107
Western	113	+ 2.5	103	100
Estimated national rate	101	0	101.5	99.5

*Change from preceding week's revised rate.
†Estimated rates are based on Jan. 1, 1953, capacities; others on Jan. 1, 1952, capacities.
Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

The Metalworking Outlook—p. 59 Production-Engineering News—p. 95

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics (1947-1949=100)	Mar. 10 1953	Mar. 3 1953	Month Ago	February Average
	130.7	130.6	130.5	130.5

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Mar. 10, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv.	6.765
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.333
Joint bars	4.925	Pipe, black, buttweld (100 ft).	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft).	8.778
Structural shapes	4.200	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.685	Terne plate (100 lb base box).	7.750
Bars, stainless (lb)	0.153	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.425
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.880
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.629

FINISHED PRICE INDEX, Weighted:

Calculated by STEEL*	Mar. 12 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	135.91
Index in cents per lb.	4.912	4.912	4.912	4.657	3.682

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*					
Finished Steel NT	$110.98	$110.98	$110.98	$106.32	$81.14
No. 2 Fdry, Pig Iron, GT.	55.04	55.04	55.04	52.54	39.84
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	39.38
Malleable Pig Iron, GT.	55.77	55.77	55.77	53.27	40.48
Steelmaking Scrap, GT.	43.17	45.00	43.00	43.00	40.17

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Mar. 12 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del Philadelphia	4.502	4.502	4.502	4.223	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60–75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.05
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.95
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.80
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.85
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	5.475-5.225	5.475-5.225	5.475-5.225	4.85-5.10	3.775
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.90-6.20	5.20
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.70
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$54.00
Wire rods, $\frac{7}{32}$-$\frac{3}{8}$", Pitts.	4.425	4.425	4.425	4.10-30	3.175
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$40.996
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del, Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	40.496
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	42.23
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

*F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$44.00	$40.25
No. 1 Heavy Melt, E. Pa.	43.00	48.50	41.50	42.50	39.00
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	42.50	38.75
No. 1 Heavy Melt, Valley	44.25	45.25	44.00	44.00	40.25
No. 1 Heavy Melt, Cleve.	44.25	44.25	44.25	43.00	39.75
No. 1 Heavy Melt, Buffalo	43.50	43.50	43.00	43.00	44.00
Rails, Rerolling, Chicago	53.50	53.50	52.50	52.50	49.75
No. 1 Cast, Chicago	43.00	43.00	43.00	49.00†	66.00

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.50
Beehive, Fdry, Connlsvl.	17.00	17.00	17.00	17.50	14.875
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	19.25

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y., del.	57.52	58.02	58.52	....
Syracuse, N.Y. del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.50	60.00	....
Fontana, Calif. K1	60.50	61.00	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Tex. L6	50.50	*51.00	51.00	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
Neville Island, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

*Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo H1	66.7

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry. frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia, delivered	66.00
Troy, N.Y. R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Mar. 12, 1953, cents per pound except as otherwise noted. Code numbers following mill points indicate producing company; key on next two pages. Changes shown in italics

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 ....54.00
Seattle S24 .....75.00

INGOTS, Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....65.00
Midland,Pa. C18 ....57.00
Munhall, Pa. U5 .....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$59.00
ClairtonPa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala. T2 ....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 59,00
Johnstown,Pa. B2 ....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 ....59.00
SoDuquesne,Pa. U5 ..59.00
Carbon, Forging (NT)
Bessemer,Pa. U5 ....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 ....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3 .....89.50
So.Chicago R2,U5,W14.70.50
So.Duquesne,Pa. U5 ..70.50
So.SanFrancisco B3 ..89.50
Alloy, Forging (NT)
Bethlehem,Pa. B2 ....76.00
Buffalo R2 .....76.00
Canton, O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....76.00
Munhall,Pa. U5 .....76.00
So.Chicago R2,U5,W14.76.00
So.Duquesne,Pa. U5 ..76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00
ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R2 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ..87.50
SHEETS BARS (NT)
Fontana,Calif. K1 ...93.18
SKELP
Aliquippa,Pa. J5 .....3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ....3.55
WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ...4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 .....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ...4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ...5.125
Worcester,Mass. A7 ...4.625
SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity, Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.50
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.25
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ...4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....4.95
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14..3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 .....4.10
Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....5.05
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85
Alloy Stand. Shapes
Clairton,Pa. U5 .....4.725
Fontana,Calif. K1 .....5.925
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 ....4.725
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30
H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75
BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85
PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.65
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2 ..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95
PLATES, Open-Hearth Alloy
Claymont,Del. C22 ....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparowsPoint,Md. B2 ..5.25
FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ...4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 .....4.95
PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..4.15
Cleveland,c.l. R2 .....4.50
Warren,O.,c.l. R2 .....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ...3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10 ..3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1..4.55
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 .....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 ..3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90
PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.70
Geneva,Utah, C11 .....5.05
PLATES, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa. B14 .....8.60
BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 ....3.95
Fontana,Calif. K1 ....4.85
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Seattle B3, N14 .....4.70
So.Chicago R2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ...3.95
So.SanFran.,Calif. B3...4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 .....4.10
Youngstown R2, U5 ....3.95
BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.50
Niles,Calif. P1 .....4.65
SanFrancisco S7 .....5.00
BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.15
BARS,Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.675
Buffalo R2 .....4.675
Canton,O. R2 .....4.675
Canton,O. T7 .....4.72
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 .....5.725
Gary,Ind. U5 .....4.675
Houston S5 .....5.075
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 .....4.675
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2 ..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.675
So.Chicago R2,U5, W14.4.675
So.Duquesne,Pa. U5 ...4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675
BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BARS & SMALL SHAPES, H. R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 .....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich. G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 .....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ..5.925
So.SanFrancisco B3 ...6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925
BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ...4.925
BeaverFalls,Pa. M12 ..4.925
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Detroit B5 .....*5.125*
Donora,Pa. A7 .....4.925
Elyria,O. W8 .....4.925
FranklinPark,Ill. N5 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind. L2,M13.4.925
Hartford,Conn. R2 ....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 ...5.475
Massillon,O. R2, R8 ..4.925
Monaca,Pa. S17 .....4.925
Newark,N.J. W18 .....5.375
Plymouth,Mich. P5 ....5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 ....5.475
Readville,Mass. C14 ...5.475
St.Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ...4.925
SpringCity,Pa. K3 .....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925
BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.00
BeaverFalls,Pa. M12 ...6.00
Bethlehem,Pa. B2 ....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....6.00
Chicago B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2, M13.6.00
Hartford,Conn. R2 .....6.45
Lackawanna,N. Y. B2 ..6.00
Mansfield,Mass. B5 .....6.45
Massillon,O. R2 R8 ....6.00
Midland,Pa. C18 .....6.00
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 .....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00
BARS, Reinforcing (Fabricators)
AlabamaCity,Ala R2 ...3.95
Atlanta A11 .....4.50
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ...3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ..4.85
Seattle B3, N14 .....4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2...3.95
Sterling,Ill.(1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95
BARS, Reinforcing (Fabricated; to consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...5.25
KansasCity S5 .....6.05
LosAngeles B3 .....5.45
Marion,O. P11 .....5.25
Seattle B3, N14 .....5.80
SandSprings S5 .....6.45
So.SanFrancisco B3 ...5.45
SparrowsPt, ¼-1" B2 ..5.25
Williamsport,Pa. S19 ...5.35
RAIL STEEL BARS
ChicagoHts.(3,4) C2 ....4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ....4.75
FortWorth,Tex.(26) T4..4.85
Huntngt,W.Va.(3) W7..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ..5.00
Williamsport(3) S19 ...5.25
Williamsport(4) S19 ...5.35
BARS, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt) L5 14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00
SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8) A10 ...3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 .....4.825
Gary,Ind. U5 .....3.775
Geneva,Utah C11 .....3.875
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. I-2, Y1 3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ...4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ...3.775
SparrowsPoint,Md. B2.3.775
Steubenville,O. W10 ...3.775
Torrance,Calif. C11 ...4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 .....3.775
WestLeechburg,Pa. A4.3.925
Youngstown U5, Y1 ...3.775
SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ...5.575
SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.675
Fontana,Calif. K1 .....6.775
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ...5.675
Ind.Harbor,Ind. Y1 ...6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ...5.675
Munhall U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 ....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175
SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 ....7.875
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.125
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ..6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.675
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind.Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.675
Weirton,W.Va. W6	4.575
WestLeechburg,Pa. A4	5.45
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	6.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.825

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1	5.34

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O. W10	5.875	....
Pittsburg,Cal. C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal. C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind.Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TIN PLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R. (22 Ga.) COILS (Cut lengths 1/2c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	...
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.05	7.35	7.85	...	...
Vandergrift,Pa. U5	...	7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	...	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/2c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.05
Middletown,O. A10	5.475
Niles,O. N12	6.275
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	5.70
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeport,Con.(10) S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	5.175
Gary,Ind. U5	3.725
Houston,Tex. S5	4.125
Ind.Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(25) B2	3.725
KansasCity,Mo.(9) S5	4.325
Lackaw'na,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
NewBritain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A1	3.725
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
Midland,Pa. C18	5.85
NewBritn.,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Bridgeptr,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind.Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	6.85
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.10
NewBritain(10) S15	5.80

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	...	...	8.55	10.50	....
Carnegie,Pa. S18	...	7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	....	....
Detroit D2	6.45	7.50	8.10	....	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	...	...	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
New York W3	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8: Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Warren,O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	...	7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. R5 (29)	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
New York W3	...	...	10.30*	12.50*	15.35*
Youngstown C8	...	...	10.30	12.50	15.35

* Plus 1.575 per 100 lb.

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

NewCastle,Pa. B4	5.80
NewCastle,Pa.(40) E5	5.70
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.60
Pawtucket,R.I. R3	6.45
Pawtucket,R.I.(21) N8	6.30
Riverdale,Ill.(40) A1	5.35
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.80
SparrowsPoint,Md. B2	5.10
Trenton,N.J. R5	6.45
Wallingford,Conn. W2	6.30
Warren,O.(40) T5	5.70
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown C8 (40)	5.70
Youngstown Y1	5.10

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn,Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	12.00

Key to Producers

A1	Acme Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A7	American Steel & Wire
A8	Anchor Drawn Steel Co.
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A13	American Cladmetals Co.
B1	Babcock & Wilcox Co.
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B6	Boiardi Steel Corp.
B8	Braeburn Alloy Steel
B11	Buffalo Bolt Co.
B12	Buffalo Steel Div., H. K. Porter Co.
B14	A. M. Byers Co.
C1	Calstrip Steel Corp.
C2	Calumet Steel Div. Borg-Warner Corp.
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp.
C7	Cleve. Cold Rolling Mills
C8	Cold Metal Products Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia-Geneva Steel
C12	Columbia Steel & Shaft
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
C22	Claymont Steel Products Dept., Wickwire Spencer Steel Division
D2	Detroit Steel Corp.
D3	Detroit Tube & Steel
D4	Disston & Sons, Henry
D6	Driver Harris Co.
D7	Dickson Weatherproof Nail Co.
E1	Eastern Gas&Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Inc.
F3	Fitzsimons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div. Borg-Warner Corp.
F6	Fretz-Moon Tube Co.
F7	Ft. Howard Steel & Wire
G2	Globe Iron Co.
G3	Globe Steel Tubes Co.
G4	Granite City Steel Co.
G5	Great Lakes Steel Corp.
G6	Greer Steel Co.
H1	Hanna Furnace Corp.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div. Borg-Warner Corp.
I-7	Indiana Steel & Wire Co.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Steel Co.
L5	Lockhart Iron & Steel
L6	Lone Star Steel Co.
L7	Lukens Steel Co.

WIRE, Merchant Quality

6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	.6.075	6.325
Aliquippa J5	...6.075	6.525‡
Atlanta A11	.....6.325	6.675
Bartonville(19)K4	.6.075	6.40
Buffalo W12	....5.225	....
Cleveland A7	...6.075	6.225
CrawfordsvilleM8	6.175	6.475
Donora,Pa. A7	..6.075	6.225
Duluth,Minn. A7	.6.075	6.225
Fairfield T2	.....6.075	6.225
Houston,Tex. S5	..6.475	6.80
Johnstown B2	...6.075	6.45†
Joliet,Ill. A7	....6.075	6.225
KansasCy,Mo. S5	6.675	7.00
Kokomo C16	....6.175	6.425
LosAngeles B3	..7.025	....
Minnequa C10	...6.325	6.70*
Monessen P7	....6.075	6.45
Palmer W12	....5.525	....
Pitts.,Calif. C11	..7.025	7.175
Prtsmth.(18)P12	..6.475	....
Rankin A7	.....6.075	6.225
So.Chicago R2	..6.075	6.325
So.S.Fran. C10	..7.025	7.40*
SparrowsPt. B2	..6.175	6.55†
Sterling,Ill.(1)N15	6.075	6.375
Struthers,O. Y1	..6.075	6.475
Torrance,Cal. C11	7.025	....
Worcester A7	...6.375	6.525

*Based on 14c zinc; †14.50c zinc; ‡17.5 zinc.

WIRE (16 gage) Stone Stone (Add 4.7% on base and extras)

	Anl'd.	Galv.
Aliquippa J5	...10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	...10.25	11.55
Crawfrdsville M8	10.73	12.51
Fostoria,O. S1	..10.40	13.00
Johnstown B2	..10.73	12.58§
Kokomo C16	10.625†	12.325§
Minnequa C10	..10.40	12.425*
Palmer,Mass. W12	10.25	12.15
Pitts.,Cal. C11	..10.60	11.90
SparrowsPt. B2	10.84	12.68§
Sterling(1) N15	10.73†	12.15†
Waukegan A7	...10.25	11.55
Worcester A7	.....	11.85

*Based on 14c zinc; §14.50c zinc, †includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	..5.225
Aliquippa,Pa. J5 (42)	...4.85
Atlanta A11	.....5.475
Alton,Ill. L1	.....5.45
Bartonville,Ill. K4	....5.325
Buffalo W12	.....5.225
Chicago W13	.....5.475
Cleveland A7, C20	....5.225
Crawfordsville,Ind. M8	5.325
Donora,Pa. A7	.....5.225
Duluth,Minn. A7	.....5.225
Fairfield,Ala T2	.....5.225
Fostoria,O. (24) S1	...5.725
Houston S5	.....5.625
Johnstown,Pa. B2	....5.225
Joliet,Ill. A7	.....5.225
KansasCity,Mo. S5	....5.825
Kokomo,Ind. C16	.....5.325
LosAngeles B3	.....6.175
Minnequa,Colo. C10	...5.475
Monessen,Pa. P7	.....5.475
Newark 6-8 ga I-1	....5.88
No.Tonowanda B11	...5.225
Palmer,Mass. W12	....5.525
Pittsburg,Calif. C11	...6.175
Portsmouth,O. P12	....5.625
Rankin,Pa. A7	.....5.225
So.Chicago,Ill R2	.....5.225
So.SanFrancisco C10	..6.175
SparrowsPoint,Md. B2	..5.325
Sterling,Ill. (1) N15	...5.225
Struthers,O. Y1	.....5.225
Torrance,Calif. C11	...6.175
Waukegan,Ill. A7	....5.225
Worcester,Mass. A7	...5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	.....6.20
Buffalo W12 (43)	.....6.35
Cleveland A7 (43)	....5.85
Crawf'sville,Ind.M8(48)	5.70
Dover,O. G6	.....6.20
Fostoria,O. S1 (43)	....6.00
Kokomo,Ind. C16 (43)	..5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43)	....5.85
Monessen,Pa. P16 (43)	..6.35
Monessen,Pa. P7 (43)	..6.10
Pawtkt,R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)	....6.15
Worcester,Mass. A7 (43)	.6.15
Worcester,Mass. T6 (43)	.6.50
Worcester,Mass. W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	....8.90
Monessen,Pa. P16 (43)	..8.50
Muncie,Ind. I-7 (43)	...8.70
Roebling,N.J. R5 (43)	..8.80
SparrowsPt.,Md. B2(43)	.8.60
Johnstown,Pa. B2 (43)	..8.50

ROPE WIRE

Alton,Ill. L1 (43)	.....8.75
Bartonville,Ill. K4	.....8.95
Buffalo W12 (43)	.....8.55
Fostoria,O. S1 (43)	....8.85
Johnstown,Pa. B2 (43)	..8.55
Monessen,Pa. P16 (43)	..8.55
Monessen,Pa. P7 (43)	..8.80
Muncie,Ind. I-7 (43)	...8.75
Palmer,Mass W12 (43)	.8.85
Portsmouth,O. P12 (43)	.8.55
Roebling,N.J. R5 (43)	..8.85
SparrowsPt. B2 (43)	...8.65
Struthers,O. Y1 (43)	....8.55
Worcester J4, T6 (43)	..8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43)	..6.25
Alton,Ill. L1 (43)	.....6.55
Bartonville,Ill K4	.....6.64
Buffalo W12 (43)	.....6.25
Cleveland A7 (43)	.....6.25
Donora,Pa. A7 (43)	....6.25
Duluth,Minn. A7 (43)	..6.25
Fostoria,O. S1 (43)	....6.25
Johnstown,Pa. B2 (43)	..6.25
Millbury(12) N6 (43)	...8.05
Minnequa,Colo. C10(43)	6.50
Monessen,Pa. P7 (43)	..6.25
Monessen,Pa. P16	....6.75
Muncie,Ind. I-7 (43)	....6.45
Palmer,Mass. W12(43)	..6.55
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)	..6.55
Portsmouth,O. P12(43)	..6.25
So.Chicago,Ill. R2 (43)	..6.25
So.SanFran. C10 (43)	..7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	....6.25
Trenton,N.J. A7 (43)	...6.55
Waukegan,Ill. A7 (43)	..6.25
Worcester A7, T6 (43)	..6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Upholstery Spring

Aliquippa,Pa. J5	.....6.275
Alton,Ill L1	.....6.50
Buffalo W12	.....6.275
Cleveland A7	.....6.275
Donora,Pa. A7	.....6.275
Duluth,Minn. A7	.....6.275
Johnstown,Pa. B2	....6.275
LosAngeles B3	.....7.225
Minnequa,Col C10	....6.525
Monessen,Pa. P7	....6.275
Monessen,Pa. P16(42)	..6.40
NewHaven,Conn. A7	..6.575
Palmer,Mass. W12	....6.575
Pittsburg,Calif. C11	...7.225
Portsmouth,O. P12	....6.275
Roebling,N.J. R5	....6.575
So.Chicago,Ill R2	....6.275
So.SanFrancisco C10	..7.225
SparrowsPoint,Md. B2	..6.375
Torrance,Calif. C11	...7.225
Trenton,N.J. A7	.....6.575
Waukegan,Ill. A7	....6.275
Worcester,Mass. A7	...6.575

WIRE, Fine & Weaving (8"Coils)

Alton,Ill. L1 (43)	.....9.20
Bartonville,Ill. K4	.....9.42
Buffalo W12 (43)	.....8.90
Chicago W13	.....9.32
Cleveland A7 (43)	.....8.90
Crawf'sville,Ind. M8(43)	8.90
Fostoria,O. S1 (43)	.....8.90
Johnstown,Pa. B2 (43)	..8.90
Kokomo,Ind. C16 (43)	..8.90
Monessen,Pa. P16 (43)	..8.90
Muncie,Ind. I-7 (43)	...9.10
Palmer,Mass. W12 (43)	.9.20
Roebling,N.J. R5 (43)	..9.20
Waukegan,Ill. A7 (43)	..8.90
Worcstr,Mass. A7,T6(43)	9.20

WIRE, Tire Bead

Bartonville,Ill. K4	....11.51
Monessen,Pa. P16 (43)	.11.40
Roebling,N.J. R5 (43)	..11.55

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala R2	...135
Ala.City,Ala.,17-18ga.R2	222
Aliqu'pa,Pa.9-14½ga.J5	139‡
Atlanta A11	140
Bartonville,Ill.(19) K4	..137
Crawfordsville,Ind. M8	..138
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	145
Johnstown,Pa. B2	138
Johnstown 17ga.,6" B2	..229
Joliet,Ill. A7	133
KansasCity,Mo. S5	149
Kokomo,Ind. C16	140
Minnequa,Colo. C10	....146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill. (1) N15	136

*Based on 14c zinc; ‡17.5c zinc.

FENCE POSTS Col.

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	133
Franklin,Pa. F5	145
Huntington,W.Va. W7	..148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill R2	136
So.Chicago,Ill R2	140
Tonawanda,N.Y. B12	...148
Williamsport,Pa. S19	...158

WIRE, Barbed Col.

AlabamaCity,Ala. R2	...144
Aliquippa,Pa. J5	.....143‡
Atlanta A11	149
Bartonville,Ill.(19) K4	..146
Crawfordsville,Ind. M8	..147
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex S5	154
Johnstown,Pa. B2	145
Joliet, Ill. A7	142
KansasCity,Mo. S5	158
Kokomo,Ind. C16	149
Minnequa,Colo. C10	....153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran.,Calif. C10	..167*
SparrowsPoint,Md. B2	..147
Sterling,Ill.(1) N15	145

*Based on 14c zinc; ‡17.5c zinc.

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K4	..132
Crawfordsville,Ind. M8	..132
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	..156
SparrowsPoint,Md. B2	..134
Sterling,Ill.(1) N15	132

TRACK BOLTS (20) Treated

KansasCity,Mo. S5(46)	..9.85
Lebanon,Pa. (31) B2	....9.85
Minnequa,Colo. C10	....9.85
Pittsburgh O3, P14	....9.85

AXLES

Ind.Harbor,Ind. S13	....5.65
Johnstown,Pa. B2	.....5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	...127
Aliquippa,Pa. J5	127
Atlanta A11	130
Bartonville,Ill. (19) K4	..127
Chicago,Ill. W13	127
Cleveland A9 (44)	125
Crawfordsville,Ind. M8	..127
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. D7	135
Houston,Tex. S5	135
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S5	139
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	.123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
So.Chicago,Ill. R2	127
SparrowsPt.,Md. B2	129
Sterling,Ill.(1) N15	127
Torrance,Calif. C11	147
Worcester,Mass. A7	133

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	...126
Aliquippa,Pa. J5	126
Atlanta A11	129
Bartonville,Ill. (19) K4	.126
Chicago W13	127
Crawfordsville,Ind. M8	..128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45)	.123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	145
Portsmouth,O. P12	132
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
SparrowsPt.,Md. B2	128
Sterling,Ill.(1) N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	..$7.80
Wheeling,W.Va. W10	...7.80

TIE PLATES

Fairfield,Ala. T2	.....4.775
Gary,Ind. U5	.....4.775
Ind.Harbor,Ind. I-2	...4.775
Lackawanna,N.Y. B2	..4.775
Minnequa,Colo. C10	..$95.50*
Pittsburg,Calif. C11	...4.925
Seattle B3	.....4.925
Steelton,Pa. B2	.....4.775
Torrance,Calif. C11	...4.925

* Per net ton.

JOINT BARS

Bessemer,Pa. U5	.....4.925
Fairfield,Ala. T2	.....4.925
Ind.Harbor,Ind. I-2	...4.925
Joliet,Ill. U5	.....4.925
Lackawanna,N.Y. B2	..4.925
Minnequa,Colo. C10	...4.925
Steelton,Pa. B2	.....4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	....6.90
Lebanon,Pa. B2	.....6.65
Minnequa,Colo. C10	....6.65
Pittsburgh J5	.....6.65
Seattle B3	.....7.15
So.Chicago,Ill. R2	....6.65
Struthers,O. Y1	.....6.65
Youngstown R2	.....6.65

RAILS	Std. No. 1	Std. No. 2	All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675	....	4.25
Fairfield,Ala. T2	....	....	....	4.25
Gary,Ind. U5	3.775	3.675	3.725	...
Huntington,W.Va. W7	....	....	....	5.25
IndianaHarbor,Ind. I-2	3.775	3.675	3.725	...
Johnstown,Pa. B2	....	....	...(16)	4.25
Lackawanna,N.Y. B2	3.775	3.675	....	4.25
Minnequa,Colo. C10	$75.50*	$73.50*	....	4.75
Steelton,Pa. B2	3.775	3.675	....	...
Williamsport,Pa. S19	....	....	....	5.00

* Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.66
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01

W	Cr	V	Mo	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

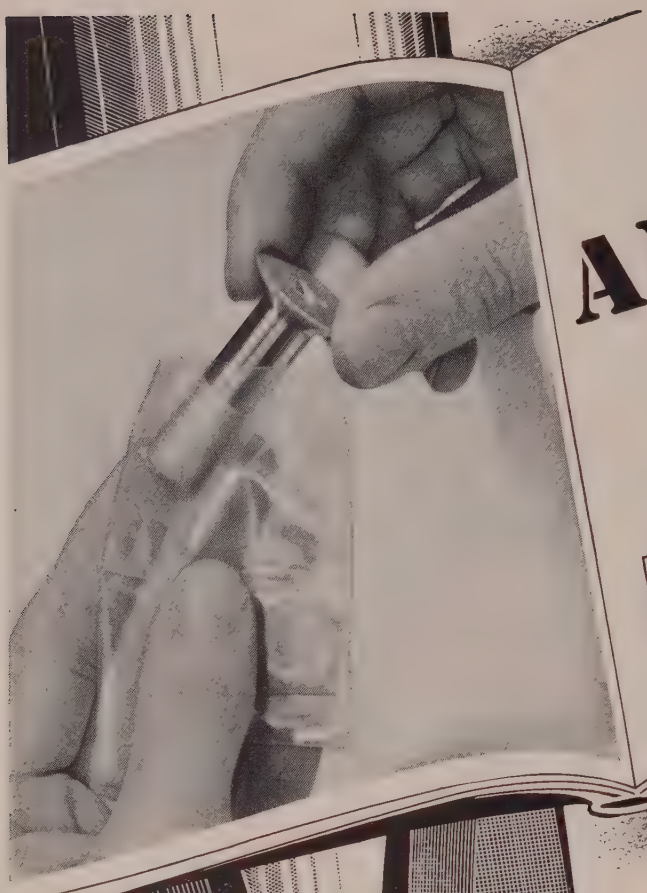
FOOTNOTES

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. Base.
(13) Add 0.50c for 17 Ga. & heavier.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn., base.
(22) Del. San Francisco Bay area
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.05c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.
(46) Plus 2.2 per cent.
(26) Reinforcing, mill

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.

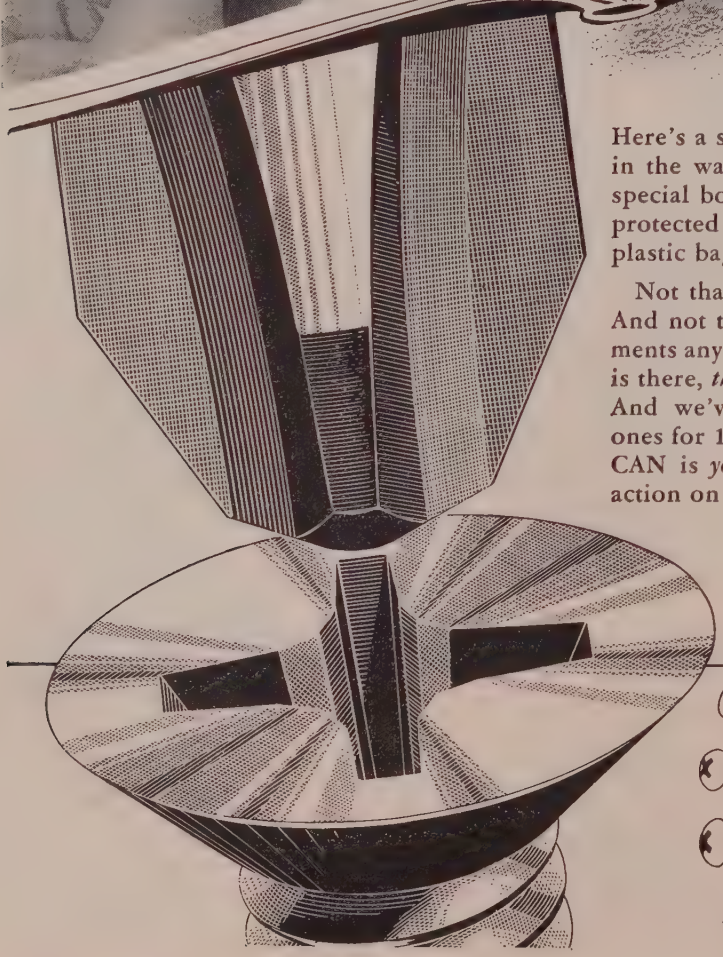
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube



THE AMERICAN STORY

CHAPTER SEVEN

Beyond the Line of Duty



Here's a shining example of what American can do in the way of special services to customers . . . a special bolt ground to a mirror finish . . . and then protected against damage by a special, *individual* plastic bag.

Not that American is in the packaging business. And not that American is soliciting special assignments any more than anyone else. But when the need is there, *the service and resources are there to meet it.* And we've been licking our share of the tough ones for 115 years . . . another reason why AMERICAN is *your* PHILLIPS HEADquarters. For fastest action on your fastening problems, write:

SINCE 1838

AMERICAN SCREW COMPANY

PHILLIPS HEADquarters

WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Conn.
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	½		¾		1		1¼		1½		2		2½		3	
List Per Ft.	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c	
Pounds Per Ft.	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21	39.5	21.5	40	21.25	40	21.25
Alton, Ill. L1 (†)	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75
Etna, Pa. N2 (†)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75
Fontana, Calif. K1 (†)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5	26	8.5	26.5	9	27	8.75	27	8.75
Ind. Harbor, Ind. Y1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75
Lorain, O. N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.75	40	26.25	40	26.25
Sharon, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75
Youngstown R2 (**)	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25
Youngstown Y1 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft.	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	20	14.75	33.75	19.5	33.75	19.5
Youngstown Y1 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (**)	24	8.25	27	9.75	27	9.75	29	11.75	29	11.75	33.75	16.5	33.75	16.5

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		3½		4	
List Per Ft.	5.5c		6c		6c		92c		$1.09	
Pounds Per Ft.	0.24		0.42		0.57		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25
Butler, Pa. F6 (†)	30.5	1.25	25	+1.75	20	+5.5	..	....	..	....
Etna, Pa. N2 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25
Sharon, Pa. M6 (‡)	29.5	—1.75	23	+2.25	18	+5.25	..	....	..	....
Sharon, Pa. S4 (†)	30.5	1.25	25	+1.75	20	+5.5	..	....	..	....
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....
Youngstown R2 (**)	...	...	....	....	....	....	33	15.75	33	15.75
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (**), 11.50c; (*), c, with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D.	B.W.	Seamless		Elec. Weld	
In.	Gage	H.R.	C.D.	H.R.	C.D.
.....	13	14.19	16.71–17.77	16.20	16.20
¼ ...	13	16.97	19.80–21.26	16.46	19.19
½ ...	13	18.22–18.77	22.08–22.82	18.19	21.41
¾ ...	13	20.35–21.35	24.92–25.49	20.69	24.35
.....	13	22.81–23.93	27.94–28.58	23.19	27.28
1¼ ...	13	25.69–26.66	31.38–32.18	25.84	30.42
1¼ ...	12	28.40–29.36	34.55–35.58	28.46	33.50
1½ ...	12	31.28–32.17	37.83–39.19	31.19	36.67
1¾ ...	12	33.87–34.82	40.09–42.44	33.05	38.86
.....	12	35.78–36.87	42.11–44.93	34.98	40.82

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

In. and shorter:	
½-in & smaller diam	15
⅝-in. & ⅝-in.	18.5
¾-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
Over 6 in. long	21
Ribbed Necked Carriage	18.5
Plank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire Bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

	Reg.	Hvy
C.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ⅝-in.	12	6.5
¾-in.-1½-in.	9	1
1⅝-in. & larger	7.5	1
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in..	16.5	6.5
¾-in.-1½-in.	12	2
1⅝-in. & larger	8.5	2
S.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in..	23	17.5
¾-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller..	35	28.5
⅝-in. & ⅝-in. ..	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger..	13	8.5
		Light
½-in. & smaller	35	28.5
⅝-in. to ⅝-in.	28.5	
¾-in. to 1½-in	26	

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger..	16
N.F. thread, all diams..	10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	.48 & 10
Plated finishes	.31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. and smaller	26
¾-in. through 1 in.	4

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c

⅞-in. under .....36 off

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvl.fur.	$14.50-15.00
Connellsvl.fdy.	.16.50-17.50
New River foundry	20.80
Wise county, foundry	15.95
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens.	$24.00
Everett, Mass., ovens New England. del.	*26.05
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens.	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar,Tex., ovens.	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens St. Louis, del.	26.00
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

COAL, CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	.30.00-33.00
Industrial xylol	.30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums)	.17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $30-$35.

NOTE: Current prices on clad steels appeared on page 181, Mar. 9 issue.

STAINLESS STEEL

(Add 4.7% to extras where new extra cards have not been issued)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	44.25	36.50	33.75
302	44.50	39.75	34.00
303	46.50	43.50	36.50
304	46.50	41.75	35.50
309	60.50	59.25	48.25
316	61.50	63.50	53.00
321	53.00	52.00	40.00
347	58.00	56.50	44.75
410	39.00	32.75	27.50
416	40.00	40.00	28.00
420	47.00	50.25	33.50
430	41.50	33.25	28.00
501	29.25	27.75	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire,except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Harrison, N. J., wire, Type 302, 33.00c; Type 304, 34.50c; Type 316, 51.50c, including 4.7% increase on base price.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.l.f. N.Y., c.l., in bags	10.90
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	.83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots.	71.00
Brass, 20-ton lots.	31.00-34.25
Bronze, 10-ton lots	.51.25-60.00
Phosphor-Copper, 20-ton lots	50.00
Copper:	
Electrolytic	37.25
Reduced	35.25
Lead	7.50*
Magnesium	.75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	46.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	83.00
Zinc, 10-ton lots.	18.00-31.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.85
Less than 1000 lb	6.00
Molybdenum:	
99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99.9% Cr min.	3.50

* Plus cost of metal.

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WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	5.81	7.17	8.32	6.42	...	6.41	7.18	11.17	6.47	6.47	7.70
Boston	6.51	7.36	8.49	6.55	...	6.42	7.47	11.18	6.56	6.75	7.98
Buffalo	5.80	6.65	8.41	6.21	...	5.90	6.95	11.07	6.08	6.30	7.67
Birmingham	5.80	6.65	7.70[2]	5.80	...	5.80	8.65	...	5.95	6.10	8.65
Chicago	5.80	6.65	7.95	5.83	...	5.83	6.56	10.65	5.95	5.95	7.18
Cincinnati	6.08	6.67	8.21	6.09	...	6.08	7.11	11.02	6.37	6.42	7.55
Cleveland	5.80	6.65	8.09	6.00	...	5.89	6.66	10.79	6.28	6.12	7.51
Detroit	6.23	6.46	8.44	6.08	7.495	6.12	7.10	10.92	6.42	6.47	7.52
Houston	6.74	...	8.67	6.89	...	6.98	...	...	6.82	6.78	8.16
JerseyCity,N.J.	6.35	7.27	8.47	6.75	...	6.59	7.78	9.54	6.39	6.60	8.01
Los Angeles	6.60	8.45	9.55	6.75	11.20	6.60	8.35	12.05	6.60	6.65	8.90
Milwaukee	5.97	6.82	8.12	6.00	...	6.00	6.83	10.82	6.12	6.12	7.35
Moline, Ill.	6.16	7.00	8.30	6.19	...	6.18	6.91	...	6.30	6.30	...
Newark, N. J.	6.62	7.41	8.58	6.72	...	6.79	7.46	...	6.70	6.78	7.18
New York	6.36	7.37	8.47	6.56	...	6.69	7.63	11.14	6.49	6.70	8.11
Norfolk, Va.	7.60	...	...	...	...	6.44	8.70	...	7.25	6.64	7.33
Philadelphia	6.16	7.18	8.30	6.50	8.30	6.47	7.50	10.84	6.22	6.29	7.42
Pittsburgh	5.80	6.65	7.95	5.94	...	5.83	6.66	10.65	5.95	5.95	7.18
Portland, Oreg.	7.80	9.05	9.75	7.60	...	7.35	9.40	...	7.30	7.30	9.25
Richmond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.63	...	6.58	6.68	7.80
St. Louis	6.10	6.94	8.25	6.14	...	6.13	6.96	10.95	6.35	6.40	7.58
St. Paul	6.47	7.31	8.61	6.50	...	6.49	7.32	...	6.61	6.61	7.84
San Francisco	6.85	8.15	9.45	6.70	...	6.60	8.40	12.00	6.45	6.70	8.85
Seattle-Tacoma	7.16	8.24	9.30	7.45	...	6.88	9.37	11.90§	6.63	7.04	8.90
Spokane (city)	7.80	9.40	10.66	7.65	...	7.10	9.70	11.90	7.00	7.10	9.15
Washington	6.31	7.61	8.90	6.89	...	6.90	8.03	...	6.93	6.95	8.17

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [5]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	22.00
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90c-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$27.00-$28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Philo or Marietta, O., Lynchburg, Va. Base price: $227, Johnstown, Pa.; $228, Etna, Pa.; $226, Anaconda, Mont.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max. Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr, 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Note: For current prices on chromium, silicon, vanadium, boron and tungsten alloys see page 161, Mar. 2 issue; calcium, zirconium, briquetted alloys and refractories, page 183, Mar. 9 issue.

IRON AND STEEL SCRAP

Open market prices as reported to STEEL, Mar. 12, 1953; gross tons, except as noted. Changes shown in *italics*.

STEELMAKING SCRAP COMPOSITE

Mar. 12	$43.17
Mar. 5	45.00
Feb. 1953	43.00
Mar., 1952	43.00
Mar., 1948	40.21

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Including brokers' Commission)

No. 1 heavy melting...	44.00*
No. 2 heavy melting...	44.00*
No. 1 bundles	45.00*
No. 2 bundles	42.00*
No. 1 busheling	45.00*
Machine shop turnings.	30.00-31.00*
Mixed borings, turnings	36.00-37.00*
Short shovel turnings..	36.00-37.00*
Cast iron borings	*36.00-37.00**
Cut structurals	*50.00-51.00**
Heavy turnings	44.00*
Punchings & plate scrap	*50.00-50.50**
Electric furnace bundles	46.00*

Cast Iron Grades

(Delivered)

No. 1 cupola	*47.00-48.00*
Charging box cast	45.00-46.00
Heavy breakable cast...	*44.00-45.00*
Unstripped motor blocks	43.00-44.00
No. 1 machinery cast..	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt..	*47.00-48.00*
Rails, 2-ft. and under..	*56.00-57.00*
Rails, 18-in. and under.	*57.00-58.00*
Rails, random lengths..	*50.00-51.00*
Railroad specialties	*54.50-55.50*

*Plus applicable freight springboards from other areas.

CLEVELAND

(Delivered consumer plant; including broker's commission)

No. 1 heavy melting...	44.00-44.50*
No. 2 heavy melting...	43.00-43.50*
No. 1 bundles	44.00-44.50*
No. 2 bundles	*42.00-42.50**
No. 1 busheling	44.00-44.50*
Machine shop turnings.	31.00-32.00*
Mixed borings, turnings	*34.50-35.00**
Short shovel turnings...	*34.50-35.00**
Cast iron borings	*34.50-35.00**
Low phos.	49.00-50.00*
Alloy free, short shovel turnings	37.00-38.00
Electric furnace bundles	46.00-46.50*

Cast Iron Grades

No. 1 cupola	49.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast..	45.00
Unstripped motor blocks	38.00-38.50
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R. R. Malleable	50.00-51.00
Rails, 3-ft. and under.	51.00-52.00
Rails, 18-in. and under	53.00-54.00
Rails, random lengths.	49.00-50.00
Cast steel	51.00-52.00
Railroad specialties	51.00-52.00
Uncut tires	51.00-52.00
Angles, splice bars	51.00-52.00
Rails, rerolling	53.50-54.00

*Plus applicable freight springboards from other areas.

YOUNGSTOWN

(Delivered consumer plant; including broker's commission)

No. 1 heavy melting...	44.00-44.50*
No. 2 heavy melting...	44.00-44.50*
No. 1 bundles	45.00-45.50*
No. 2 bundles	42.00-42.50*
Machine shop turnings.	32.00-33.00*
Short shovel turnings..	36.50-37.00*
Cast iron borings	36.50-37.00*
Low phos.	50.00-51.00*
Electric furnace bundles	47.00-47.50*

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00

*Plus applicable freight springboards from other districts.

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting....	*$37.50-38.50*
No. 2 heavy melting...	35.50
Machine shop turnings.	25.50
Mixed borings, short turnings	*29.50*
Low phos. (structural & plate)	*41.50-42.00*
Shovel turnings	*29.50*

Cast Iron Grades

No. 1 cupola	40.00
Unstripped motor blocks	32.00-33.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting....	*42.50-43.50*
No. 2 heavy melting....	*41.50-42.50*
No. 1 bundles	*42.50-43.50*
No. 2 bundles	nominal
No. 1 busheling	*42.50-43.50*
Machine shop turnings..	*32.50-33.50*
Mixed borings, turnings.	*36.50-37.50*
Short shovel turnings...	*36.50-37.50*
Structurals & plate	*48.00-49.00*
Heavy turnings	*42.50-43.50*
Couplers, springs, wheels	*50.00-51.00*

Cast Iron Grades

No. 1 cupola	*44.00*
Charging box cast	45.00
Heavy breakable cast...	*47.00-48.00*
Unstripped motor blocks.	*37.00-38.00*
Drop broken machinery.	*50.00-51.00*

CINCINNATI

No. 1 heavy melting...	42.00
No. 2 heavy melting...	41.35
No. 1 bundles	42.35
No. 2 bundles	41.35
No. 1 busheling	43.00
Machine shop turnings.	32.35
Mixed borings, turnings	36.35
Short shovel turnings..	36.35
Cast iron borings	36.35
Structural & plate, 1 ft.	48.35

Cast Iron Grades

No. 1 cupola	46.00
Charging box cast	45.00
Stove plate	42.00
Burnt cast	42.00
Heavy breakable cast.	45.00
Unstripped motor blocks	43.00
Brake shoes	41.00
Clean auto cast	52.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.00
Malleable	55.00
Rails, 18-in. and under	53.00
Rails, random lengths.	47.00
Rails, rerolling	52.00

DETROIT

No. 1 heavy melting...	39.00-40.00
No. 2 heavy melting...	38.00-39.00
No. 1 bundles	40.00-41.00
No. 2 bundles	*37.00-38.00*
No. 1 busheling	40.00-41.00
Machine shop turnings..	*24.50-25.50*
Mixed borings, turnings.	*27.00-27.75*
Short shovel turnings...	*27.00-27.75*
Punchings & plate scrap	44.00-46.00

Cast Iron Grades

No. 1 cupola	47.50
Charging box cast	40.00-42.00
Stove plate	45.00
Unstripped motor blocks	32.00-35.00
Clean auto cast	50.00
Malleable	48.00

BUFFALO

No. 1 heavy melting....	*$45.00-46.00*
No. 2 heavy melting...	42.00-43.00
No. 2 bundles	42.00-43.00
No. 1 bundles	43.00-44.00
No. 1 busheling	43.00-44.00
Machine shop turnings.	32.50-33.00
Mixed borings, turnings	36.50-37.00
Short shovel turnings.	36.50-37.00
Low phos.	48.50-49.00

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	42.50-43.00
Drop broken machinery	45.50-46.00

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting...	34.17
No. 2 heavy melting...	31.17
No. 1 bundles	33.17
No. 2 bundles	31.17
Machine shop turnings..	*23.17*
Mixed borings, turnings	22.17
Short shovel turnings...	*27.17*
No. 1 cast	35.00-36.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast..	47.00-49.00

CHICAGO

(Including broker's commission)

No. 1 heavy melting...	42.50*
No. 2 heavy melting...	40.50*
No. 1 bundles	43.50*
No. 2 bundles	39.00*
No. 1 busheling	43.50*
Machine shop turnings.	29.00-30.00*
Mixed borings, turnings	31.50-32.50*
Short shovel turnings..	31.50-32.50*
Cast iron borings	31.50-32.50*
Cut structurals	46.50*
Heavy turnings	41.50*
Electric furnace bundles	45.50*

Cast Iron Grades

No. 1 cupola	*43.00-45.00*
Stove plate	42.00-43.00
Unstripped motor blocks	38.00-40.00
Clean auto cast	48.00-50.00
Drop broken machinery	46.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt..	*46.00-48.00*
R.R. Malleable	46.00-48.00
Rails, 2-ft. and under..	*53.00-55.00*
Rails, 18-in. and under.	*55.00-57.00*
Angles, splice bars	*52.00-54.00*
Rails, rerolling	52.50-54.50

*Plus applicable freight springboards from other areas.

BIRMINGHAM

No. 1 heavy melting...	39.00-40.00
No. 2 heavy melting...	38.00-39.00
No. 1 bundles	39.00-40.00
No. 2 bundles	36.00-37.00
No. 2 busheling	35.00-36.00
Machine shop turnings.	28.00-29.00
Mixed borings, turnings	31.50-32.50
Short shovel turnings..	31.50-32.50
Cast iron borings	31.50-32.50
Cut structurals	43.00-44.00
Heavy turnings	38.00
Punchings & plate scrap	41.50
Electric furnace bundles	41.00

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	43.00-44.00
Charging box cast	39.00-40.00
Stove plate	38.00-39.00
Heavy breakable cast.	36.00-37.00
Unstripped motor blocks	35.00-36.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	41.00
Malleable	55.00
Rails, 3-ft. and under.	46.00
Rails, 18-in. and under	49.00
Rails, random lengths.	49.00-51.00
Cast steel	44.00
Uncut tires	43.00
Angles, splice bars	46.00
Rails, rerolling	48.00

ST. LOUIS

No. 1 heavy melting...	40.00
No. 2 heavy melting...	40.00
Machine shop turnings.	28.00
Short shovel turnings..	32.00

Cast Iron Grades

No. 1 cupola	43.00-45.00
Charging box cast	39.00-41.00
Heavy breakable cast..	36.00-38.00
Unstripped motor blocks	33.00-35.00
Brake shoes	41.00
Clean auto cast	46.00-47.00
Burnt cast	37.00-39.00

Railroad Scrap

Malleable	40.00
Rails, 3-ft. and under.	55.00-57.00
Rails, random lengths.	52.00-54.00
Uncut tires	48.00
Angles, splice bars	49.00
Rails, rerolling	50.00-52.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting...	34.00
No. 2 heavy melting...	29.00
No. 1 bundles	33.00
No. 2 bundles	27.00
Machine shop turnings.	25.00
Mixed borings, turnings	25.00
Short shovel turnings.	25.00
Electric furnace, No. 1	40.41

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	40.00
Heavy breakable cast.	36.00-38.00
Unstripped motor blocks	28.41
No. 1 wheels	47.00

Railroad Scrap

Rails, random lengths.	38.41

SAN FRANCISCO

No. 1 heavy melting...	30.00
No. 2 heavy melting...	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
No. 1 busheling	30.00
Machine shop turnings.	12.00
Mixed borings, turnings	29.00
Short shovel turnings..	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	37.50
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast.	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft. and under.	42.00
Rails, 18-in. and under	45.00
Rails, random lengths.	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting...	30.00
No. 2 heavy melting...	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
Machine shop turnings.	12.00

Cast Iron Grades

(F.o.b. Shipping Point)

No. 1 cupola	44.00

HAMILTON, ONT.

(Delivered Prices)

Heavy Melt.	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	31.50
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	28.50
Rails, Remelting	35.50
Rails, Rerolling	38.50
Busheling	28.00
Busheling new factory: Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	28.50

Cast Iron Grades†

No. 1 Machinery Cast..	50.00

† F.o.b., shipping point.

OLD CEILING BASE PRICES

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00

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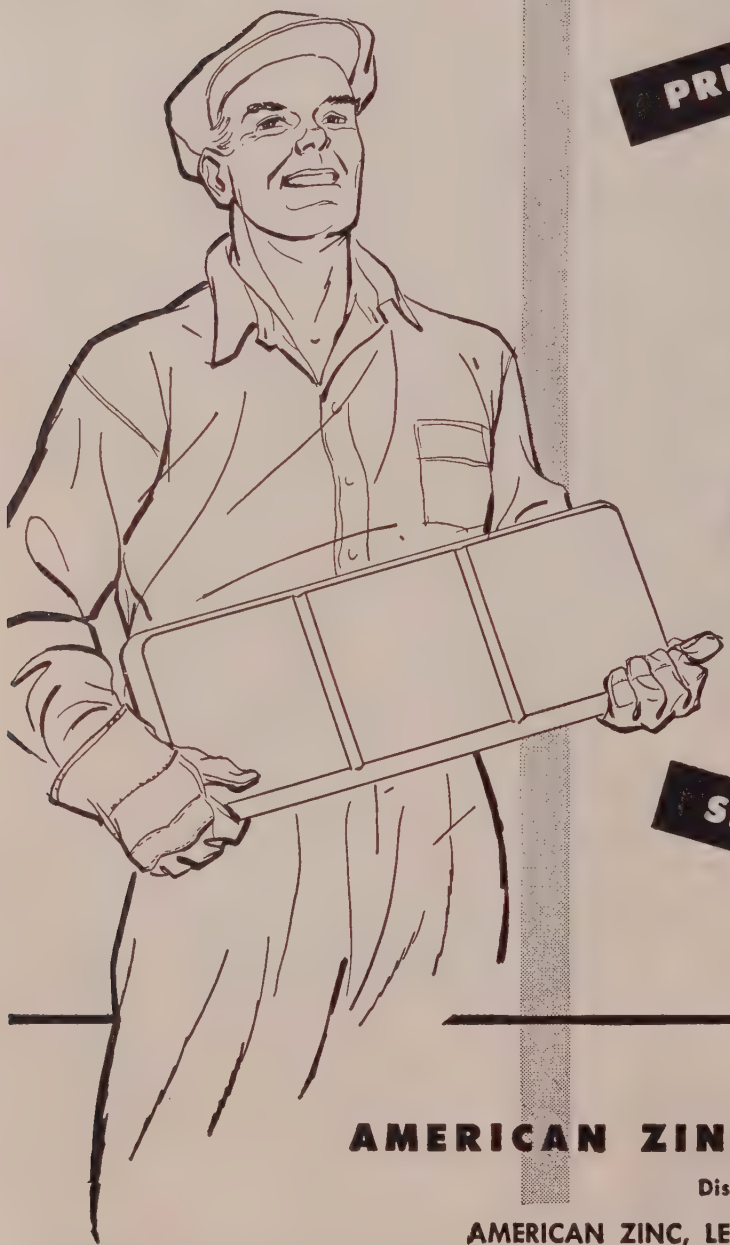

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The Metal Market

Metal prices continue upward in third full control-free week but the average rise is small, suggesting that the initial upward pressure has been largely spent

METAL PRICES continue to wend their way higher as industry enters its third full week without controls.

List of "upward adjustments" last week includes custom-smelter copper, nickel and monel products, lead, magnesium and its products, beryllium alloys, certain grades of copper and brass scrap, and secondary aluminum ingot.

Successor to CMP—Also of significance to fabricators is a new ingredient in the alphabet soup of controldom—DMS. Called the Defense Materials System, it will be a successor after June 30 to CMP and a plan that defense contractors will have to live with for some time. New setup under DMS is essentially the long-expected fully open-ended CMP which will aid delivery of essential metals to military and atomic suppliers and their subcontractors.

Under DMS, mill set-asides of copper and aluminum for priority holders will be adopted, much like the present setup for steel. After direct defense needs are cared for, civilian users will be free to buy the rest and in any quantity they like. Currently defense takes 30 per cent of aluminum produced, 20 per cent of copper and 12 per cent of the steel produced.

Pressure Eased—While price advances last week were numerous, the average rise was small, indicating that the initial pressure of decontrol has been largely spent. Clearly the copper balloon has found the limit of its buoyancy after two weeks of free flight. A 30-cent level by midsummer seems a fair bet to some observers. For the moment, though, there are almost as many prices as suppliers.

Some custom smelters are now selling at 33 cents a pound. Others quoting 32 cent domestic and 36 cent foreign metal have a new gimmick . . . package purchases of half-domestic, half-foreign metal at a flat 34 cents, thus doing away with the double standard set up by OPS. Domestic primary electrolytic copper remains in the 27.50-32.00 cent bracket and lake copper has landed at 32.15 cents. Canadian price is now 33 cents Canadian currency.

First Since '50—Magnesium ingot was boosted 2.5 cents to 27 cents a pound by Dow Chemical Co. Alloy ingots are up 2 cents, while sheet and extruded products bring 3 cents more. Though the first primary increase since September, 1950, it won't help magnesium sales, already spotty.

Lead regained its illogical half-cent price cut induced by London trading, as buyers realized the attractive rate and swamped the market. Present level of 13.50 cents, New York, should hold as demand remains brisk. Foreign metal still undersells the domestic by a quarter-cent.

Nickel, Monel Too—International Nickel Co. added 7 cents a pound to its nickel sheet, strip, plate, rod and tube, 4.5 cents to monel products and 6.5 cents to inconel products. This is on top of the mill product increases granted last Dec. 15 and represents pass-through of the 3.5-cent primary increase of Jan. 14.

Beryllium alloy casting ingots were advanced 3.3 cents by Beryllium Corp. of America. Beryllium-aluminum alloy moved up $3.75 per pound of contained beryllium, and wrought products, including beryllium copper alloy, were also increased.

A Story in Figures

The story of zinc's troubles is eloquently expressed in latest statistics from The American Zinc Institute. Shipments were down 9000 tons, production down 5000 tons, stocks up 5000 tons and unfilled orders down 2500 tons to less than half a month's production.

Aluminum to the Defense

Holding fire several months after a Copper and Brass Research Association report implied that auto companies were losing their shirts experimenting with aluminum radiators to no avail, the Aluminum Association let loose a blast of its own last week. "Tomorrow automobiles are likely to have aluminum radiators," states the report. "Problems of brazing on a production basis are nearing solution," and other possible methods (soldering aluminum fins to aluminum or brass tubes) are under investigation. Brazing currently has the inside track, as it allows operation at higher cooling system pressures. Truck radiators using aluminum top and bottom tanks and cast side columns have been in use about four years.

Nonferrous Briefs

Refined copper and scrap consumption last year totaled 2,188,000 net tons of copper content and supply amounted to 2,529,000 tons, states NPA. Fabricators' inventories (one month going into '53) and the stockpile gained by 341,000 tons.

Ending the moratorium on aluminum stockpiling is urged by ODM. It wants to begin an accelerating program in the second quarter.

Allocation controls will remain on nickel, tungsten, molybdenum and cobalt after CMP dies. Third -quarter nickel allotments will be the same as in the second quarter, despite a scheduled cut of 20 per cent.

Small brass fabricators are annoyed by the increase in quantity schedules inserted in brass mill allowances when the new price structure was set up.

Cobalt consumption last year passed the 10-million-pound mark, rising 9 per cent to 10.8 million pounds.

Kaiser Aluminum & Chemical Co. will build a $66 million aluminum sheet and plate mill across the Ohio River from Cincinnati at Mentor, Ky., to roll commercial sizes. The company received certificate of necessity for fast write-off of 50 per cent of the cost.

Six tons of copper have been exported from Colombia, first shipment in history.

France, No. 4 aluminum producing country (behind the U. S., Canada, Russia) turned out 106,000 metric tons last year, a new record. Bauxite output of 1.1 million tons was twice pre-war level. Some 35 per cent of France's bauxite is exported.

Aluminum stockpiling will be resumed, despite reports to the contrary and protests of industry. Much of the present stockpile is high-impurity metal.

Mercury markets continue their downhill slide as spot quotations near the $195 mark. In January, price ranged up to $220. Imports from Mexico, Spain, Italy and Yugoslavia have been heavy and government purchases haven't developed as expected.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 27.50c-33.00c, Conn, Valley; Lake 32.125c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.50c; 88-10-2 (No. 215) 41.75c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 24.00c.

Zinc: Prime western 11.00c; brass special 11.25c, intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c, delivered.

Lead: Common 13.30c; chemical 13.40c; corroding, 13.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 23.50-24.50; No. 12 foundry alloy (No. 2 grade) 22.75-23.25; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.00-24.00; grade 2, 22.50-23.50; grade 3, 21.75-22.25; grade 4, 22.00-22.50.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $195-$201, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $37.72 per lb of contained beryllium, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Feb. 27, 1953. Listings are lowest quotations.)

Sheet: Copper 48.98; yellow brass 42.03; commercial bronze, 95% 48.49; 90% 47.46; red brass, 85% 45.91; 80% 44.89; best quality, 43.09; nickel silver, 18%, 58.52; phosphor-bronze grade A, 5%, 68.57.

Rod: Copper, hot-rolled 45.33; cold-drawn 46.58; yellow brass free cutting, 35.92; commercial bronze 95% 48.18; 90% 47.15; red brass 85%, 45.60; 80%, 44.58.

Seamless Tubing: Copper 48.92; yellow brass 44.94; commercial bronze, 90%, 50.02; red brass, 85%, 48.72.

Wire: Yellow brass 42.32; commercial bronze, 95%, 48.78; 90%, 47.75; red brass, 85%, 46.20; 80%, 45.18; best quality brass, 43.78.

(Base prices, effective Feb. 26, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.14; 30,000 lb lots, 35.27; l.c.l. 35.77, Weatherproof, 100,000 lb, 35.35; 30,000 lb, 35.60; l.c.l., 36.10. Magnet wire del., 15,000 lb or more 41.10; l.c.l., 41.85.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.048	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.156-0.0188	48.0	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $18.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $18.00 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill 36.000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Feb. 13, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL

(Base prices f.o.b. mill, effective Feb. 13, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled oval, carbonized, carloads, 78.00c; 10,000 to 30,000 lb 79.00c; 3000 to 10,000 lb 80.00c; 500 to 3000 lb 81.00c; 100 to 500 lb, 83.00c; under 100 lb, 86.00c; f.o.b. Cleveland.

Nickel Chloride: 37.35c in 100 lb bags, 1 to 3 bags; 3 to 99 bags 35.35c; 34.85c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers $1.10 per lb.; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 15,000 pounds, f.o.b. shipping point. Listings are lowest quotations.)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	27.125	27.125	26.375
Yellow Brass	20.625	20.375	19.500
Commercial Bronze			
95%	25.750	25.500	25.000
90%	24.875	24.625	24.125
Red Brass			
85%	24.000	23.750	23.250
80%	23.000	22.750	22.250
Best Quality(71-80%)	21.500	21.250	20.750
Muntz metal	19.375	19.125	18.625
Nickel silver, 10%	24.375	24.125	12.1875
Phos. Bronze, A	29.175	28.875	27.875
Naval Brass	19.25	19.00	18.50
Manganese Bronze	19.25	19.00	18.50

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 28.50; No. 2 copper 26.50; light copper 25.50; refinery brass (60% copper) per dry copper content 25.00.

Beryllium copper: Heavy scrap, .020-in. and heavier, not less than 1.5% beryllium, 42.00; light scrap, 37.00; heavy and light scrap mixed, 37.00; heavy scrap, less than 1.50% but more than 0.40% beryllium, 35.00; light scrap, less than 1.50% but more than 0.40% beryllium, 30.00; heavy and light scrap mixed, less than 1.50% but more than 0.40% beryllium 30.00. Freight allowed on shipments of 200 lbs or more east of Mississippi river; from points west of Mississippi freight allowed up to maximum of $3 per cwt.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 25.50-26.00; No. 2 23.50-24.00; light copper 22.00-22.50; No. 1 composition red brass 19.00; No. 1 composition turnings 18.50; mixed brass turnings 13.50; new brass clippings 18.50; No. 1 brass rod turnings 17.00; light brass 12.50; heavy yellow brass 14.50; new brass rod ends 17.50; auto radiators, unsweated 15.00; cocks and faucets 16.50; brass pipe 17.50.

Aluminum: Clippings 2S 13.00; old sheets 10.00; crankcase 10.00; borings and turnings 8.00; pistons and struts 6.50.

Tin: No. 1 pewter 70.00; block tin pipe 100.00; No. 1 babbitt 60.00.

Lead: Heavy 10.25-10.75; battery plates 5.25-5.50; linotype and stereotype 12.00-12.50; electrotype 10.25-10.75; mixed babbitt 12.50-13.50.

Zinc: Old zinc, 5.00; new die cast scrap, 5.00; old die cast scrap, 4.00.

Nickel: Sheets and clips 58.00-60.00; rolled anodes 58.00-60.00; turnings 55.00; rod ends 58.00-60.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Mar. 11-12	27.50-33.00	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Mar. 2-10	27.50-32.00	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Feb. 25-28	27.50-28.50	13.30	11.25	121.50	20.50	34.50	60.00	85.25
Feb. 3-24	24.50	13.30	11.50	121.50	20.50	34.50	60.00	85.25
Feb. 2	24.50	13.30	12.00	121.50	20.50	34.50	60.00	85.25
Jan. 27-31	24.50	13.80	12.00	121.50	20.50	34.50	60.00	85.25
Jan. 22-26	24.50	13.80	12.50	121.50	20.50	34.50	60.00	85.25
Jan. 16-21	24.50	13.80	12.50	121.50	20.00	34.50	60.00	85.25
Jan. 15	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.75
Jan. 14	24.50	13.80	12.50	121.50	20.00	34.50	60.00	84.25
Jan. 13	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.75
Jan. 12	24.50	13.80	13.00	121.50	20.00	34.50	56.50	83.25
Jan. 7-10	24.50	14.30	13.00	121.50	20.00	34.50	56.50	83.25
Feb. 1953 Avg.	25.136	13.30	11.431	121.50	20.50	34.50	60.00	85.25
Jan. 1953 Avg.	24.50	13.838	12.596	121.50	20.173	34.50	58.654	84.442
Feb. 1952 Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plates . . .

Plate Prices, Page 177

Pittsburgh — Producers of steel plates would like a more clearly defined picture of where they stand with controls, and what, if any, controls will be in effect for third quarter. They feel this understanding is necessary before they undertake booking third quarter business. Regardless of controls or lack of them, demand is expected to be strong through the period.

Boston — Except for narrower-smaller sizes of strip mill plate, there are enough tickets out to take up second quarter plate output. Demand for plates used in production of bombs is heavy.

New York—While local warehouses are in little better position on plates, the over-all picture insofar as direct mill shipments are concerned, remains tight. District tank, boiler shops and shipyards report difficulty getting a balanced inventory.

Philadelphia—All district plate mills have opened their books through May at least. The latest to do so is the Claymont, Del., producer, which canceled out April entirely.

Sheets, Strip . . .

Sheet and Strip Prices, Page 177 & 178

Cleveland—Sheetmakers are under pressure for tonnage from all directions and as things now stand it doesn't look as though open-ending of the Controlled Materials Plan will result in much, if any, additional tonnage for civilian goods manufacturers until well along in last half. Hot and cold-rolled sheets are in exceptionally tight supply. Electrical sheets and enameling stock are tighter than they have been for months, reflecting the sharp pickup in demand on appliance account. All grades of flat-rolled, except galvanized, appear to be in a supply pinch. In the case of galvanized, pressure has been off for some time, partly a seasonal development. Expectations are spring will see a revival in galvanized demand as building activity picks up seasonally. To what extent the decline in farm income over past months will cut down demand for farm steel remains to be determined. Some trade authorities think part of the current slump in galvanized sheets is attributable to this factor. Pricewise, the market for flat-rolled steel is strong, but except for stainless grades prices are unchanged. Stainless prices were advanced 3 per cent on the 300 series and 2 per cent on the 400 and 500 series as result of approval by the Office of Price Stabilization of upward adjustments reflecting advances in chrome and nickel costs. At least one producer put the new prices into effect as of Feb. 28. Another large interest, however, announced the effective date as Mar. 3.

Boston—Heavy orders for carbon sheets in all gages carry an unexpected number of authorized tickets and the outlook for open-end tonnage in second quarter is narrowing.

New York—Commercial consumers of hot and cold-rolled sheets find it difficult to place additional tonnage, even on a rated basis, for shipment over remainder of first half. They also are having the same difficulty in placing electrical sheets and enameling stock. Certain specialties are in less stringent supply, notably coated sheets; also hot strip, ranging eight to 12 inches in width.

Philadelphia—Sheet demand continues buoyant, affecting all major grades except galvanized. Inquiry for this latter however is improving, reflecting approach of the spring building season.

Pittsburgh—Sheets continue in tight supply. From present indications they will be that way well into third quarter. Appliance manufacturers as well as auto builders are contributing strongly to the current high volume of conversion tonnage.

Chicago—Automotive pressure for hot-rolled and cold-rolled sheets is unabated. Cold-rolled for auto bodies is the current production deterrent in Detroit. A serious shortage through second quarter is anticipated.

Los Angeles—Retirement of the 1911 sheet jobbing mill and hand sheet mill at the Torrance plant of Columbia-Geneva Steel Division, U. S. Steel Corp., coupled with a contract to furnish a mid-western fabricator 5000 tons per month of billet stock for production of shell casings, has caused shifting of some of the Torrance plant's production to other U. S. Steel plants.

Steel Bars . . .

Bar Prices, Page 177

Boston—Second quarter commitments for carbon bars 1-inch and over without tickets are limited. Where mill openings are not filled shell and fuse production will take up the space. Defense requirements for larger bars will be heavy in third quarter under limited controls.

New York—Hot carbon bars continue in tight supply. This is especially true in the case of larger sizes for shell work. Commercial consumers not only are having difficulty placing new tonnage for shipment in first half, but are having trouble with their manufacturing schedules because of shipment arrearages on tonnage already placed. Some report mills are behind five and six weeks on delivery promises.

Philadelphia—Hot carbon bars are in more stringent supply with shell requirements rising. Demand has spurted over the past month, resulting in special pressure on sizes ranging from 2-inches up. Producers are booked full on rated tonnage for the entire second quarter, this applying to both large and small sizes. Cold drawn bar mills are fast filling up their schedules for remainder of this half on rated work.

Pittsburgh—Some easing in bar supply late in third quarter is expected. Much depends upon what controls are in effect to assure adequate supplies for shells. Second quarter requirements for shell steel are about 25 per cent over those of first quarter.

Cleveland — Prospects appear dim for any material easing in bar supply conditions until well along in last half of the year. This is especially true of large sizes which are in heavy demand for shells and other military requirements. With mill books over-loaded over remainder of the first half, prospects are little open space in rolling schedules will develop to permit commercial consumers to obtain tonnage over and above scheduled allotments.

Detroit — Bliss & Laughlin Inc., general offices at Harvey, Ill., announced last week that effective with the opening of its new Detroit plant, 8 Mile Rd. and Hoover Ave., its base price on cold-finished carbon steel bars shipped from the new plant will be $5.125 per 100 pounds, f.o.b. plant. The new operations are scheduled to start about May 1.

Tubular Goods . . .

Tubular Goods Prices, Page 181

Pittsburgh — Some producers of buttweld pipe are casting about for other markets, and perhaps, other producing points, with increased competition for business in prospect. In a buttweld market that is showing signs of softening, prospects of a favorable competitive position in the price spread for points, for example, in the Middle West, seem a little unpromising. Encouraging note for producers is the picture in negotiated pipe line business. This is for assured business in long pipe lines that guarantees a continued outlet for an extended period.

Beaver Falls, Pa.—Babcock & Wilcox Co., Tubular Products Division, increased prices on its seamless and welded tubing in accordance with OPS general over-riding regulation No. 43, effective with shipments on and after Feb. 27. Seamless and welded tubes, type 300 series, were increased 2 per cent; seamless and welded stainless tubes, type 400 series, 2 per cent; seamless tubes, type 500 series, 2 per cent. Other products containing chromium and nickel will be increased accordingly.

Boston—Set-aside of 30 per cent on seamless tubing is not expected to be revised materially for defense needs. Pipe is entering into atomic energy construction to large extent. Some contracts include 16-inch electric welded. Buttweld pipe set-aside, 9 per cent, may be reduced. Distributors are not taking allocations on buttweld and more direct shipments are available.

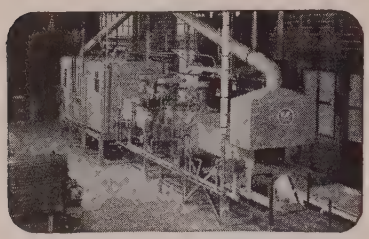
New York — United States Steel Corp. has booked 100,000 tons of miscellaneous steel products, including irrigation pipe, for delivery to Israel over the next three years.

Seattle—Cast iron pipe demand is strengthening as spring construction projects reach bid stage. In most instances alternative types of water mains are considered.

Semifinished Steel . . .

Semifinished Prices, Page 177

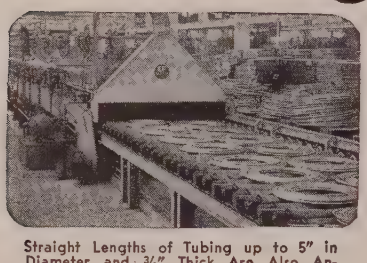
Wheeling, W. Va.—Concentration of steelmaking operations at Wheeling Steel Corp.'s Steubenville Works will increase its steel ingot capacity to approximately 2,010,000 tons annually. Reconditioning of the old Carnegie-Illinois Steel Corp.'s plant at Mingo Junction, O., will be com-



A Special Atmosphere Belt Conveyor Electric Furnace Annealing Short Lengths of Alloy Tubing—Operates at Temperatures up to 2040° F.

EF Gas Fired Forced Convection Continuous Roller Hearth Special Atmosphere Furnace Bright Annealing Long Straight Lengths of Tubing.

ANNEALING TUBING BRIGHT and CLEAN *Continuously*



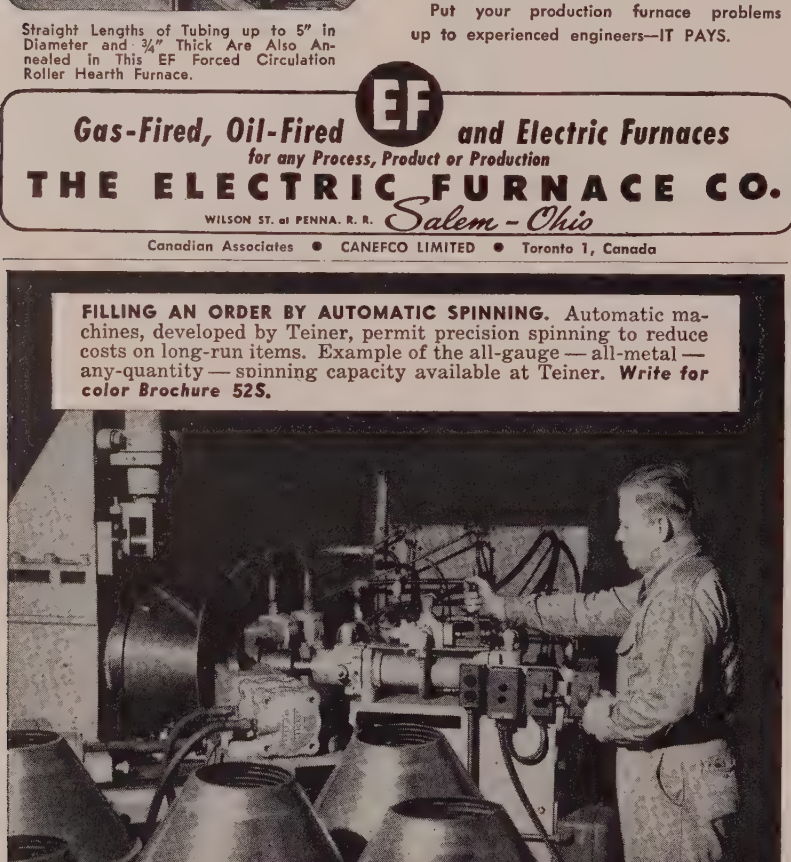
Straight Lengths of Tubing up to 5" in Diameter and ¾" Thick Are Also Annealed in This EF Forced Circulation Roller Hearth Furnace.

We have built many outstanding production furnaces for processing copper, brass, stainless, aluminum, nickel, silver and other ferrous and non-ferrous tubing — in large and small coils—straight lengths, long and short, and in various diameters — also for wire, strip and many other products and processes.

Put your production furnace problems up to experienced engineers—IT PAYS.

Gas-Fired, Oil-Fired EF *and Electric Furnaces*
for any Process, Product or Production
THE ELECTRIC FURNACE CO.
WILSON ST. at PENNA. R. R. *Salem - Ohio*
Canadian Associates • CANEFCO LIMITED • Toronto 1, Canada

FILLING AN ORDER BY AUTOMATIC SPINNING. Automatic machines, developed by Teiner, permit precision spinning to reduce costs on long-run items. Example of the all-gauge — all-metal — any-quantity — spinning capacity available at Teiner. ***Write for color Brochure 52S.***



ROLAND TEINER CO. INC. METAL SPINNING

ROLAND TEINER
COMPANY, INCORPORATED
134 TREMONT ST., EVERETT 49, MASS. Tel. EV 7-7800

pleted soon, and it will be made a part of the Steubenville South Works.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 181

New York — Deliveries of small bolts and nuts for manufacturing assemblies now average around four to six weeks; large diameter bolts around 12 weeks, with shipments of nuts for these larger bolts even more extended.

Wire . . .

Wire Prices, Page 179

New York—Orders for high carbon wire specialties are in excess of shipments. Producers are booked through May. Volume for the automobile industry is heavy, including valve spring wire. There is pressure for deliveries. Some second quarter tickets are yet to be converted into orders.

Boston — Consumers of manufacturers basic wire with CMP tickets are placing second quarter orders, generally keeping within allocations. In spots there is some inventory building. Users are keeping tabs on stocks where wire products are in good supply.

Pittsburgh—District wire producers would prefer to face April and May with books more heavily loaded with orders for nails, barbed wire, and fence. For the moment there is little indication of any pickup before end of April.

Chicago—Wire producers find demand for merchant products rising once more. Approach of spring is the stimulant. Dealers have been carrying light stocks.

Stainless Steel . . .

Stainless Steel Prices, Page 181

Pittsburgh—Stainless steel product prices were advanced last week by the various producers following action by the Office of Price Stabilization authorizing the passing on of recent cost increases in nickel and chromium. The increases effected were 3 per cent on the 300 series, and 2 per cent on the 400 and 500 series.

Some of the producers announced the price increases effective as of Feb. 27. Others, however, put their new schedules into effect on following days.

At the same time the U. S. Steel Corp. issued new extra cards incorporating the 4.7 per cent increase allowed last August by OPS on extras and base price. Most other producers, however, have not yet issued new extra lists, and as a result they continue to add the 4.7 per cent increase of last August to their invoices, thus making for differences in published base prices. This variance may be changed when new extra cards are issued, it is indicated. Most producers round out new base prices and extras to the nearest quarter cent. New stainless prices will be found on page 181.

Boston — Wallingford Steel Co., Wallingford, Conn., announced effective with Mar. 1 shipments, base price increases of 2 per cent on straight chrome and 3 per cent on

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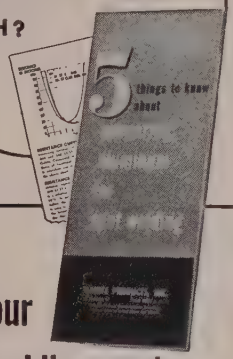

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chrome nickel stainless. New price lists covering stainless base and extras will be issued shortly.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 177

Los Angeles—Demand for reinforcing steel is spurting. Valuation of new construction in Los Angeles in February totaled $33,767,540. This is 50 per cent higher than in the like period last year.

Seattle—Rolling mills are working on order backlogs, no important reinforcing placements having been made recently.

Structural Shapes . . .

Structural Shape Prices, Page 177

Boston—Easing in steel products for bridge and construction work is noted, including steel grid flooring, H-bearing piling and concrete reinforcing bars. Fabricators are getting better balance on structural sizes, but foreign steel is a factor. Bridge work is slowly getting to estimate boards.

New York—Placing of more than 12,000 tons of bridge work features structural activity, although awards of 4100 tons for a state hospital addition in Kings county, New York, and 2800 tons for a war memorial building, in Rochester, N. Y., are also outstanding. Public work of one description or another is expected to dominate demand for some time.

Philadelphia—The War Department has given the Delware River Port Authority the green light for construction of a 60,000-ton bridge between Philadelphia and Gloucester, N. J. Plans may be up for bids in May.

Pittsburgh—No immediate supply relief is seen for structural steel users, despite open-ending of CMP. Mills still find it necessary to turn away rated orders.

Seattle—New business is coming out slowly. Meanwhile, fabricators are reducing backlogs.

Metallurgical Coke . . .

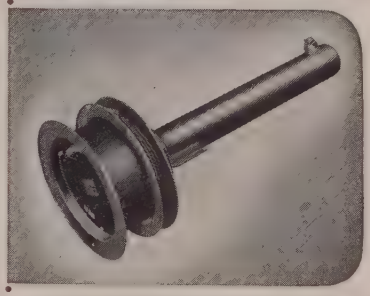
Metallurgical Coke Prices, Page 181

Washington—Production of coke in January totaled 6,763,204 net tons, according to the Bureau of Mines. This was 1 per cent higher than the December total but was slightly below the January, 1952, output. The small decrease from a year ago was due to a substantial drop in beehive coke production, as oven coke output attained a new peak for a 31-day month. Of total production during January 6,284,493 tons were oven coke, up 3/10 of 1 per cent from December, and 478,711 tons of beehive up 12.1 per cent from the preceding month. Oven coke stocks at the end of January were 2,040,795 tons, off 6.3 per cent from December, but equal to 10.1 days production.

Pittsburgh—In anticipation of rising competition, district steel mills are expected to put emphasis on river coal. The mills have been purchasing beehive coke produced from coal from inland coal mines. Overland transport has made a higher price necessary.

Cleveland—Slight tightening in the

2 ways to make crane operations pay more



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oven foundry coke market is following in the wake of quickening activity in foundry operations. Supplies are adequate to care for current requirements but there is little surplus and should a spurt in demand develop a real supply pinch could easily be experienced. Foundries turning out automotive and appliance castings are operating at the best pace in months. Generally, it is estimated the gray iron shops are engaged at from 65 to 75 per cent of capacity. Awarding of the contract for a new blast furnace here for the American Steel & Wire Division, U. S. Steel Corp., to Arthur G. McKee & Co., has revived coke trade speculation in the coke requirements for this furnace and the Ford foundry here which is destined to take a large part of the new furnace's pig iron output.

Chicago—The recent bulge in coke demand appears over, gray iron foundries having bolstered their inventories.

Pig Iron . . .

Pig Iron Prices, Page 176

Buffalo—One of the earliest openings of the lake navigation season on record is resulting in rapid absorption of merchant pig iron tonnage piled on the ground here awaiting shipment to upper lake ports. Merchant sellers report no difficulty in finding outlets for their current iron production.

Cleveland—Merchant iron sellers are disposing of all their production but they are not exactly rushed with business. The pickup in some foundry operations of late has stepped up demand pressure for iron only slightly. Most foundries appear fairly well covered for the present. Automotive castings shops and foundries producing light castings for the appliance industry are more active than they were some months back, but this increase in activity appears to be offset to some extent by noticeable slackening at some of the heavy castings shops on defense work.

New York—With district gray iron shops operating around 70 per cent of normal capacity, pressure for pig iron is steady. Most foundries have fairly good inventories, ranging from 30 to 60 days.

Philadelphia—Supply and demand for foundry pig iron continue in balance. At least there is no demand pressure from the foundries that can't be met. Basic iron, on the other hand, is in tight supply.

Erection of a blast furnace for the Colorado Fuel & Iron Corp. at Claymont, Del., is contemplated but the project is delayed pending financing of the purchase of the Roebling company properties, acquired late last year.

Standard foundry iron from Holland is offered around $59-$60 duty paid Philadelphia, but as this is above the domestic market, little business is being consummated. German basic is offering around $63.25 duty paid Philadelphia.

Chicago—High melting rates of gray iron and malleable foundries serving the automotive industry are keeping pig iron demand at high level.

Birmingham — Merchant pig iron continues to move into production as fast as it comes from the furnaces. As has been the case for some years, 90 per cent of the district's output remains in the South.

Los Angeles—Foundries are showing interest in pig iron from New Zealand selling for $60 per gross ton, $5 less than the local domestic market.

Scrap . . .

Scrap Prices, Page 184

Washington—Consumption of ferrous materials (scrap and pig iron) during 1952 totaled 30,520,946 gross tons of purchased scrap, 31,104,603 tons of home scrap, and 54,912,976 tons of pig iron for a total melt of 116,538,525 tons, according to the Bureau of Mines, U. S. Department of the Interior.

Stocks of purchased scrap held by consumers at the end of December totaled 4,983,016 gross tons, a slight decrease for the third consecutive month, but were 2,154,890 tons greater than were on hand Jan. 1, 1952. Pig iron stocks totaled 1,752,516 tons, increase of 58,523 tons over November.

Scrap stocks held by suppliers on Dec. 31, 1952, were: dealers and auto wreckers, 1,199,534 gross tons; producers and railroads, 160,286 tons. The total held by consumers and suppliers was 7,529,438 tons.

Boston—Turnings are $1 per ton lower with steelmaking grades, including heavy melting steel, nominally unchanged. Moderate premiums are being paid for No. 1 steel. Hardly enough business is being done to establish stable prices on steel grades. Cast scrap is slow.

New York—Brokers' buying prices are undergoing adjustment although the market on prime grades of openhearth scrap remains unsettled. No. 1 heavy melting is tentatively quoted at $37.50 to $38.50.

Buffalo—Widely circulated report that steelmaking grades of scrap had advanced $5 per ton here are denied. Top consumers are still buying at the old ceiling levels, although one mill is doing business on a selective basis. Limited supplies of No. 1 heavy melting are available at $2 a ton higher. Cast scrap market continues weak.

Philadelphia—Following withdrawal of the Morrisville, Pa., consumer from the market for No. 1 heavy melting steel and No. 1 bundles, prices have settled down with these grades now around $42.50 to $43.50, delivered. Easing is noted in practically all steel grades. Recent premium buying by the Morrisville consumer with prices at approximately $48.50 delivered for No. 1 heavy melting and No. 1 bundles, including a low phos differential, is expected to be the last for some time, as recent purchases were made to sweeten existing substantial stocks.

Pittsburgh—Firming of the scrap market appears in the offing. Better grades show some stiffening pricewise. Bad weather this past week left some dealer stocks in depleted condition. No. 1 heavy melting is not moving actively, the reason being this grade is being upgraded and moved at a premium. Some

softening is evident in cast iron borings, quoted $36 to $37. Price spread on cut structurals has narrowed to $50 to $51. Punchings and plate scrap shows a rise to $50 to $50.50. Railroad specialties are displaying strength, with prices reported above the old OPS ceilings.

Cleveland — Except for blast furnace and cast grades, the scrap market appears firm at the price levels of the past couple weeks. Material is moving steadily to the mills on old contracts but not much in the way of new buying is reported. The mills are noticeably selective in accepting material, reflecting their comfortable inventory position.

Cincinnati—Fairly large supplies of most dealer grades of scrap are on hand. The only shortages noted are in the railroad items, particularly rails. The movement of scrap is excellent with a good volume flow. Steel mills report substantial inventories. Prices are holding steady.

Chicago—Steelmaking scrap transactions last week set no new price pattern, merely making more firm realignments established the previous week. Tonnage moving isn't great. Another month is expected to bring improvement. A good portion of incoming material is from out of the district and is involving additional springboard freight to the consumer of around 50 cents a ton. Railroad grades are reflecting pressure toward higher prices. Cast material continues weak.

Birmingham—While still in an uncertain position, the scrap market is in less disorder than it has been for several weeks. Prices posted represent, on the whole, those established by the district's largest consumer.

San Francisco—The scrap market has settled down to a quiet routine. Prices are being maintained at the recently established lower levels.

Seattle—Scrap is arriving at tidewater in satisfactory volume. Quality is described as excellent. Large buyers report no immediate supply problems. Inventories are still rising.

Warehouse . . .

Warehouse Prices, Page 183

Philadelphia—Warehouse business, on a daily basis, is the best so far this year. This reflects continued good demand for all the major products, and steadily improving inventory position at the warehouses.

Pittsburgh—Warehouses report inquiries in steady volume. Customers are being supplied from a wider range of products than was possible heretofore. Stocks are not balanced, however. Hot and cold-rolled sheets in 14, 16, 18 gage are not too plentiful. Heavy plate is likewise in strong demand.

Chicago—Distributors appear to be getting more current with demand. However, it is the already easy items that are slackening.

Cleveland — Steel distributors in this area anticipate a seasonal upswing in demand, especially from the building line. A substantial volume of public work is in prospect for early action. This is likely to place the warehouses under additional strain. Currently, over-all demand is described as strong with stocks still

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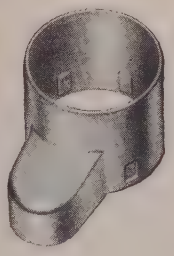

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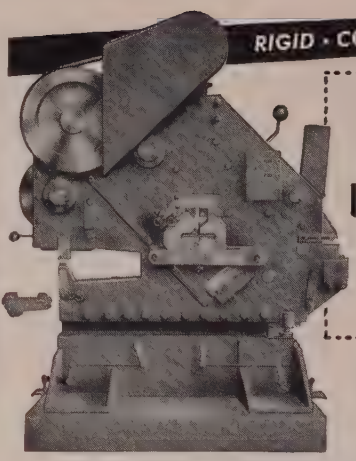

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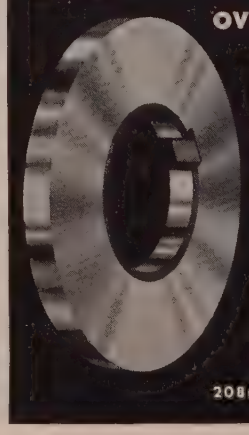

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highly unbalanced as to sizes and products, though total tonnage held by the warehouses is markedly improved as compared with some months back.

Birmingham — Warehouse stocks generally remain unsatisfactory with inventories less than 50 per cent of normal. Demand and shipments continue heavy.

Los Angeles—Fabricators are ordering heavily. Warehouse sales in February were 5 to 10 per cent above the January level. One distributor, dealing chiefly in sheets, reported a 20 per cent jump in sales.

Seattle—Warehouses report volume is increasing seasonally. The "freeze" on federal public works has not yet affected the warehouse trade but it is expected to should jobs be held up much longer.

Rails, Cars . . .

Track Material Prices, Page 179

New York — Warren Petroleum Corp. placed an order with the American Car & Foundry Co. for 500 tank cars, 250 of which are 11,000-gallon dual service high pressure cars to carry liquefied petroleum gas and 250 of 8000-gallons capacity each for transport of gasoline. The cars will be fabricated at the tank car plant at Milton, Pa.

Domestic freight car awards in February involved 2284 cars, according to the American Railway Car Institute and Association of American Railroads. Backlog of cars on order as of Mar. 1 was 71,883. Car deliveries in February totaled 7780 against 7981 in January and 7358 in February a year ago.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

9570 tons, garden state bridge, over Raritan river, Middlesex county, New Jersey, to Bethlehem Steel Co., Bethlehem, Pa.

4100 tons, basic science building, state hospital, Kings county, New York, through Cauldwell-Wingate Co., New York, to Lehigh Structural Steel Co., Allentown, Pa.

2800 tons, war memorial building, Rochester, N. Y., to American Bridge Division, United States Steel Corp., Pittsburgh.

2500 tons, seven bridges, state thruway, Montgomery county, New York, to Harris Structural Steel Co., New York.

2000 tons, maintenance hangar, James Connelly Air Base, Waco, Tex., to Maxwell Steel Co., Ft. Worth, Tex., through Fransworth & Chambers Co., Houston, Tex., general contractor.

800 tons, Washington state Steamboat Slough swing span bridge, to Gunderson Bros. Engineering Corp., Portland, Oregon.; M. P. Butler, Seattle, general contractor.

500 tons, building, Prentice-Hall Inc., Englewood Cliffs, N. J., to unnamed fabricators.

325 tons, laboratory building, Pratt & Whitney Division, United Aircraft Corp., East Hartford, Conn., to Standard Structural Steel Co., Hartford; Associated Construction Co., Hartford, general contractor.

145 tons, high school, Hingham, Mass., to West End Iron Works, Cambridge, Mass., through Tornabene Bros. Co., Newton, Mass., general contractor.

140 tons, industrial building, Philadelphia, through Stone Construction Co., general contractor, to Max Corchin, that city.

125 tons, high school, Springfield township, Montgomery county, Pa., through McCloskey & Co., Philadelphia, to Max Corchin, that city.

STRUCTURAL STEEL PENDING

30,000 tons, bridge, Delaware River Port Authority, between Philadelphia and Gloucester, N. J.; project approved by War Department with plans out likely in May.

3400 tons, Creedmoor state hospital, Queens county, New York, opening of bids postponed until Mar. 17.

1600 tons, hangar, International Airport, Queens county, New York, bids opened Mar. 11.

440 tons, lift bridge, Pennsylvania railroad, over Calumet river, South Chicago, Ill., bids Mar. 23.

350 tons, building addition, northeast corner 34th St. and Park Ave., New York, pending; David Moed, 101 Park Ave., that city, architect.

225 tons, steel bridge, East low canal, Columbia Basin project; J. A. Terteling & Sons, Boise, Idaho, low $2,908,725, to Bureau of Reclamation, Ephrata, Wash.

135 tons, Army maintenance and repair shop, Indiantown Gap, Pa.; H. B. Alexander & Son, Harrisburg, Pa., awarded general contract.

REINFORCING BARS . . .

REINFORCING BARS PLACED

350 tons, maintenance hangar, Waco, Tex., to Alamo Boiler & Machine Works, Waco, Tex., through Fransworth & Chambers Co., Houston, Tex., general contractor.

290 tons, five state bridge, Amesbury-Salisbury, Mass., to Northern Steel Inc., Boston, through A. V. Taunrasi Co., Somerville, Mass., general contractor.

250 tons, laboratory building, Pratt & Whitney Division, United Aircraft Corp., East Hartford, Conn., to Scherer Steel Co., Hartford; Associated Construction Co., Hartford, general contractor.

240 tons, high school, Hingham, Mass., to Joseph T. Ryerson & Son, Inc., Cambridge, Mass., through Tornabene Bros. Co., Newton, Mass., general contractor.

100 tons, military barracks, Ladd Air Field, Alaska, to Joseph T. Ryerson & Son, Inc., Seattle; Peter Kiewit Sons Co., Seattle, general contractor.

100 tons, marine barracks, Adak, Alaska, to Joseph T. Ryerson & Son Inc., Seattle; Raber & Co., general contractor.

100 tons, Nash auto warehouse and salesroom, Seattle, to Joseph T. Ryerson & Son Inc., Seattle; Cawdrey & Vemo, Seattle, general contractors.

REINFORCING BARS PENDING

500 tons, office building for Pacific Telephone & Telegraph Co., Seattle; general contract to Howard S. Wright & Co. Inc., Seattle.

300 tons, Ault Field and Bangor Depot installations, near Seattle; bids in to Thirteenth Naval District, Seattle.

PLATES . . .

PLATES PENDING

400 tons, powerhouse penstock, Beaver Falls project; bids to Ketchikan, Alaska, Apr. 14; George H. Beck, mayor.

PIPE . . .

CAST IRON PIPE PENDING

550 tons, 8 to 4-inch, Metzger Water District, Portland, Oreg.; bids Mar. 12; E. W. Carter, Portland, consulting engineer.

450 tons, 22,000 feet 12 to 6-inch supply mains, materials by district, also 1-million-gallon reservoir; bids to H. A. Cross, secretary, District No. 42, 16906—Fifteenth Ave. N. E., Seattle, Mar. 17.

150 tons, 2900 feet 8 to 4-inch cast iron, also 1100 feet 20 and 18-inch steel water pipe; bids in at Chehalis, Wash., Mar. 9.

Unstated, 2500 feet 12 and 6-inch, also reservoir, booster station, etc.; bids to M. J. Ristoe, clerk, Sunnyside, Wash., Mar. 16.

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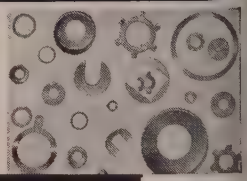

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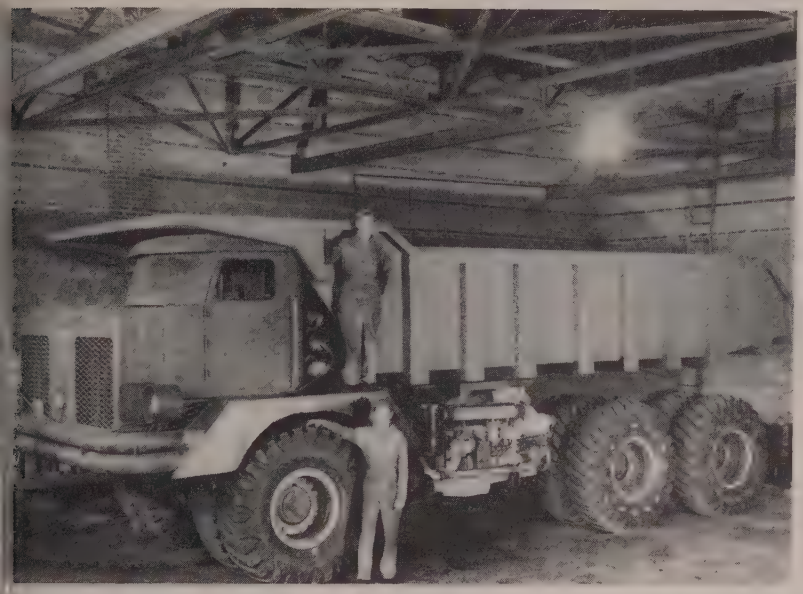
IF METALWORKING PLANTS ARE YOUR PROSPECTS . . .

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

Metalworking Notes



Build "World's Largest Truck"

As tall as two men, this 12-wheeled vehicle is said to be the "world's largest truck" by its manufacturer, Dart Truck Co., Kansas City, Mo. The 95,000-pound dump truck weighs 215,000 pounds when loaded. Powered by two 350-horsepower diesel engines, it is the first of six trucks made for a Bagdad, Ariz., copper company, to be used in mining. The vehicle's construction cost $95,000

Names Michigan Representative

Hygrade-Atlas Inc., Newark, N. J., manufacturer of liquid pressure filters and metal surface-treating equipment, appointed Parry Engineering Corp., Detroit, as its representative for all Hygrade-Atlas equipment in Michigan.

Hill-Chase Will Build

Hill-Chase & Co. Inc., Philadelphia, plans a 23,000 square-foot building in that city to house new facilities.

More Orders for Ryan

Ryan Aeronautical Co., San Diego, Calif., has been awarded new orders totaling more than $3.7 million for a variety of products ordered by several aircraft manufacturers.

Opens Puerto Rico Office

A New York chemical engineering firm, R. S. Aries & Associates, opened a branch office in San Juan, Puerto Rico. The branch office will handle technical and economic work on new industries as well as consultation to local companies.

Basalt Plans California Plant

Basalt Rock Co. Inc., Napa, Calif., plans to construct a plant at Fontana, Calif., for fabrication of large diameter steel pipe and construction of cement pipe. The plant is expected to employ about 200 workers.

Management Studies at Iowa

The State University of Iowa announces its summer management course will be held June 15 through June 27 in Iowa City, Iowa.

Completes Synthetic Gas Study

National Petroleum Council completed a $500,000 study in which it concluded that the Bureau of Mines proposals for manufacture of synthetic gasoline from coal and oil shale are "definitely uneconomical under present conditions, and the need for a synthetic liquid fuel industry is still in the distant future."

Requests More Oil Production

The Petroleum Administration for Defense says that a review of programs for expansion of domestic facilities for production of lubricating oils showed that further increases in capacity beyond those presently planned are still necessary.

Lockheed at Height of Output

Lockheed Aircraft Corp., Burbank, Calif., has more transport aircraft in production or on order than ever be-

SEE

CONTINUOUS POWERED OVERHEAD CHAIN CONVEYOR

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Before Buying Light Trolley Conveyers

Engineered for dependable overhead conveying, the Chainveyor, a light-duty, fully enclosed, continuous chain conveyer is indeed an outstanding performer. Extremely flexible with short radius curves and straight tubular track sections, the Chainveyor is easily installed and adaptable to unusual situations. The Chainveyor is, in fact, completely practical everywhere light overhead conveying equipment is required.

*The Chainveyor is manufactured by United States Spring and Bumper Co. of Los Angeles, Calif., and distributed nationally by Mathews Conveyer Company.

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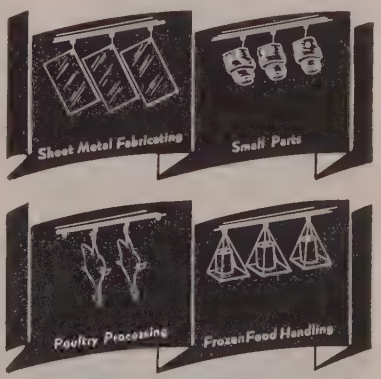

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Canadian Division, Mathews Conveyer Company, Ltd., Port Hope, Ontario

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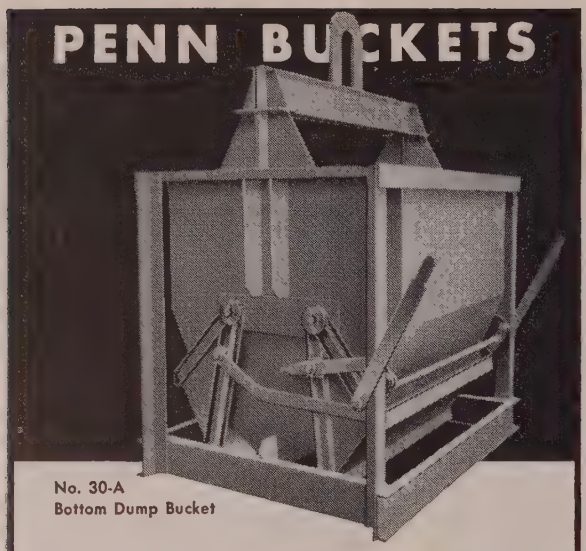

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Bottom Dump Bucket

Exclusive design makes this bottom dump bucket easy to operate . . . easy to open. Efficient for foundry use in handling all types of sand, moulding or core, dry or prepared. Can be used with coke, scrap iron and castings also. Sizes 7 to 200 cu. ft.

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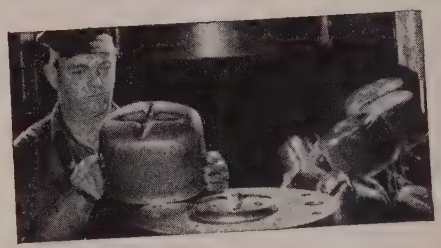

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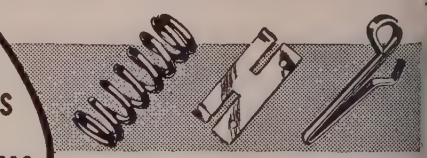

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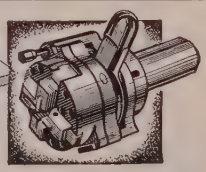

famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

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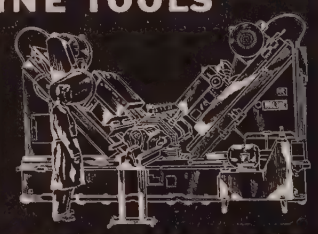

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Fundamental knowledge and essential principles of heat treatment of steel are presented in simple and understandable manner. Research engineers, metallurgical students and steel plant metallurgists engaged in metallurgical investigations and the heat treatment of ferrous and non-ferrous metals will find this book of inestimable value.

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ire. Backlog for Lockheed's Super onstellations has increased to a ecord $400 million.

nters Powdered Metallurgy

Following extensive research in owdered metallurgy combined with ommercial production in a sizable ilot plant, Joseph Dixon Crucible Co., ersey City, N. J., entered the field y forming a subsidiary corporation, ixon Sintaloy Inc., Stamford, Conn.

ıdustries Enter Seattle

Pacific Northwest Industries Inc. established in a newly-purchased ıilding in Seattle, equipped for pro- ıcing drill rods and hot milling bits. nother company, Spokane-Western ear Works, opened a branch sales ıd engineering office in Seattle to rve eastern Washington, northern aho and Montana.

niform Tubes Incorporated

Uniform Tubes, Collegeville, Pa., aker of seamless tubing for over 20 ears, announces its incorporation. lbert H. Mainwaring is the presi- nt and chairman of the board.

pens Los Angeles Plant

E. A. Vermere Inc. opened a new os Angeles plant to manufacture arts by powder metallurgy.

Tall Steel Steeple

Towering 147 feet above a Birmingham church is a porcelain enamel steeple manufactured by Bettinger Corp. of Waltham, Mass. The specially-designed steeple may be the first to be entirely covered by porcelain enameled steel. More than 11 tons of porcelain were used in construction

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

Thompson Awards Contract

Thompson Wire Co., Baltimore, awarded a contract for construction of a one-story plant of about 50,000 square feet in Baltimore.

Bethlehem To Enlarge Facilities

Bethlehem Steel Co. awarded a contract for enlargement of warehouse and office facilities in Brooklyn, Md.

Randall Division Moves

Randall Corp.'s Murray Products Division, Towson, Md., manufacturer of brake parts and hose clamps and a fabricator of aluminum, is moving its manufacturing facilities at Arbutus, Md., into its Towson plant.

Name To Be Changed

Stockholders of the Independent Pneumatic Tool Co. voted to change the corporate name to Thor Power Tool Co., effective Mar. 17.

New Maryland Plant

Maryland Cooperage & Steel Drum Co., Baltimore, is building a new plant at Curtis Bay, Md. It will contain about 20,000 square feet.

Announces Mexican Office

A new sales and service office of Thor Power Tool Co., Aurora, Ill., was opened in Mexico City, Mexico,

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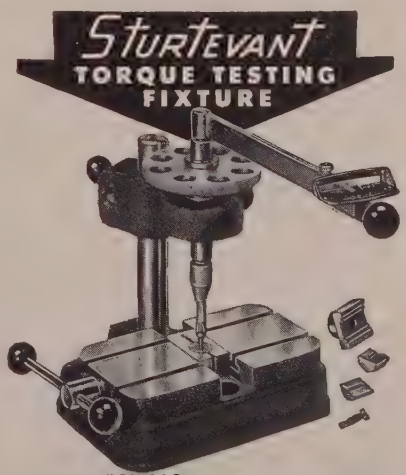

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IBM To Build Plant

International Business Machines Corp. plans to start construction of a new plant at Greencastle, Ind. this spring. It is to be completed in early 1954.

GM Division Expands

The Chevrolet aviation engine division of General Motors Corp., at Tonowanda, N. Y., doubled its employment during the past six months and will require an additional 500 workers by summer, according to a plant executive.

New California Industries

Among new industries located in Alameda county, Calif., during January were Erie Meter Systems Inc. and Magic Seal Industries.

Latrobe Announces Agents

Latrobe Steel Co., Latrobe, Pa., appointed Eight Inc., metal sales division, Salt Lake City, Utah, as exclusive sales agents in Utah, Idaho and eastern Nevada.

Three Distributors Added

Alloy Rods Co., York, Pa., manufacturer of alloy arc welding electrodes, added three distributors to its national organization. New distributors are Cohoes Welding Works, Cohoes, N. Y., Lincoln Welding Supply Co., Lincoln, Nebr., and Sommerfeld Welding Supply Co. Inc., Oshkosh, Wis.

Rockwell Kiln Operating

Rockwell Lime Co. is now operating its new gas-fired rotary lime kiln for production of dolomite lime at its Rockwood, Wis., plant.

Leases Dallas Building

Hutchinson Co., Dallas, fabricator of steel stairways, leased an office and warehouse building in Dallas. The facilities are equipped with trackage and dock-high truck wells.

Association Elects Officers

The Heating & Cooling Coil Manufacturers Association elected the following officers: L. L. Simmons, of American Blower Corp., Detroit, president; Howard F. Brinen, of Young Radiator Co., Racine, Wis., vice president; and William P. Raffone, of G & O Mfg. Co., New Haven, Conn., secretary-treasurer.

From Hats to Shell Casings

Frank H. Lee Co., Danbury, Conn., hatmaker, converted part of its plant to defense work and now produces aircraft engine parts and shell castings.

Adds to Metal Department

National Lead Co., New York, will operate its newly-acquired Pioneer Alloy Products Division as part of its metal department. Pioneer Alloy's production consists of corrosion-resisting valves.

Bullard Opens Sales Offices

Bullard Co., Bridgeport, Conn., opened new field sales offices at Chicago, Detroit, Boston, Milwaukee, Rock Island, Ill., and South Bend, Ind.

Rohr Completing Factory

The remaining two-thirds of the Riverside, Calif., plant of Rohr Aircraft Corp. is expected to be constructed this spring and summer. Delay in steel shipments has held up completion of the factory.

Canadian Factory Erected

A factory with floor space of 45,000 square feet is being erected at Galt, Ont., for use by Allen-Bradley Canada Ltd., a newly incorporated associate of Alen-Bradley Co., Milwaukee.

MECHANICAL or STRUCTURAL DRAFTSMAN

Experienced draftsman desired who can sense the long-term and increasing opportunity now offered in development of materials handling equipment. Employment is offered in permanent (non-defense) work on overhead electric traveling cranes, hoists and similar equipment, with a long established company now expanding its plant in the mid-west area.

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If you qualify and are interested in advancing with a continually expanding organization, write, giving complete resume of positions held and duties performed, education, age, salary desired, etc., to:

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SMALL FABRICATING PLANT ESTIMATOR Must have experience in take off, estimating fo component parts of ships, et cetera. Must hav shop experience as to layout and production Warrants good salary for capable man in smal town North Florida. Replies held confidential Applicant must have good references. Write Bo 672, STEEL, Penton Bldg., Cleveland 13, Ohio

WELDING FOREMAN for steel foundry locate in W. Pa.—Man experienced in the welding o steel castings of various types. Must be a goo production man able to supervise the turnin out of quality castings on a production basis Write giving places of previous employment age, and salary desired. Reply Box 685, STEEL Penton Bldg., Cleveland 13, Ohio.

Accounts Wanted

MANUFACTURERS' REPRESENTATIVE wit office located in Detroit, Michigan, desires ad ditional lines. Now handling cold-headed item springs; selling all automotive concerns an diversified industries. Desires well rated washe stamping, or waste cloth line. Write Box 6 STEEL, Penton Bldg., Cleveland 13, Ohio.

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Available—one of the best TOOL STEE SALESMEN in the state of Wisconsin. Wri Box 682, STEEL, Penton Bldg., Cleveland 1 Ohio.

GENERAL MANAGER—Exp., purch., sale admin. engrg., B.S. in M.E., Age 45, Marrie desires opportunity with family-owned compar fabricators steel, nonferrous shapes. Now Purch Dir. national mfr. consumer durables. Desir salary plus bonus related to profits. Write Bo 683, STEEL, Penton Bldg., Cleveland 13, Ohi

PLANT MANAGER: M.I.T. GRADUATE WIT 25 years' experience in Plant Management, in cluding Production planning, machine and pla loading, Material and tool control, quality co trol, purchasing, incentives, standard cost variable budgets, overhead analysis and breal even charts, job evaluation, supervisory respons bility chart and labor relations. Capat administrator with excellent record. Write B 671, STEEL, Penton Bldg., Cleveland 13, Oh.

MANUFACTURING EXECUTIVE: CAPABI OF DIRECTING ALL PHASES OF OPER TION. COLLEGE GRADUATE SEVER YEARS ACTUAL SHOP TRAINING PRIOR T MANAGEMENT. BROAD BACKGROUND I METAL WORKING AND MACHININ FOUNDRY, ASSEMBLY, GALVANIZING A OTHER FINISHES. EXCELLENT RECORD PRODUCTION AND IN LABOR RELATION EXPERIENCED IN JOBBING AND MA PRODUCTION. WILL RELOCATE. CA PRODUCE ANY METAL PRODUCT. WRI BOX 686, STEEL, PENTON BLDG., CLEV LAND 13, OHIO.

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Extensive, comprehensive and practical expe ence all phases of product and tool design w mass production of fasteners, pressed metal a wire products and small precision mechanism Age 41, presently employed but looking for outstanding opportunity. Write Box 690, STEE Penton Bldg., Cleveland 13, Ohio.

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Eight Wheel, Cupola Type

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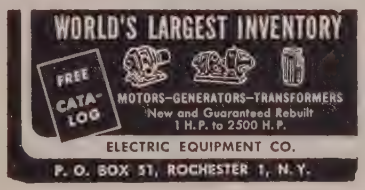

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PARKER STRAIGHT LINE POLISHING MACHINE
Six 15 HP Floating Heads
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FOR SALE

Planer, Niles-Bement-Pond Table 60" wide, 20 ft. long, 36" high from table to cross rail. Direct Motor Drive-DC current through AC-DC Motor Generator Set. May be seen operating on either day shift or early evening night shift. ($9750.00.) **Write Box 678, STEEL, Penton Bldg., Cleveland 13, Ohio.**

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Two Salem Gas Annealing Furnaces—Model 501. 1 H.P. Induction Motor drives metal conveyor 21" wide with electric control panels. Each unit occupies a space 7½ ft. wide x 26 ft. long. Capacity—3,475,000 BTU or 3,000 cu. ft. per hr. Each unit is connected to conveyor 13½" wide x 10 ft. long. Excellent condition. Priced to sell.

Contact:

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Hot Rolled Rounds ..... 85 Tons

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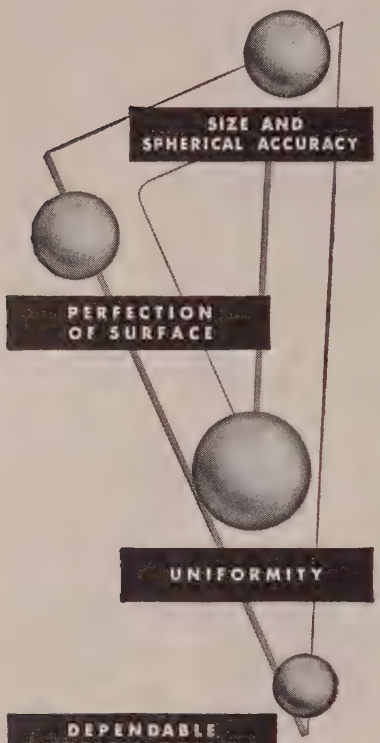

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Modern industry strives to make the pound of cure unnecessary

SAFETY programs aim at preventing accidents through employee education. Baker-Raulang Co., Cleveland, maker of industrial trucks, pushes its safety program with a series of eight posters, available to other industries for the asking.

MINIMIZING health hazards brings even cosmetic makers into the industrial safety picture. A leg make-up manufactured by Sutton Cosmetics Inc., New York, turns up at the St. Marys, Pa., plant of Speer Carbon Co. in a new role —sealing facial pores against irritating industrial dusts.

WELL-EQUIPPED plant hospitals minimize the effects of accident and illness. Inhalation therapy in cases of heart attack, shock or gas asphyxia is the purpose of this device in the hospital of the Spang-Chalfant plant of the National Supply Co., Etna, Pa. It is a development of Mine Safety Appliances Co., Pittsburgh.

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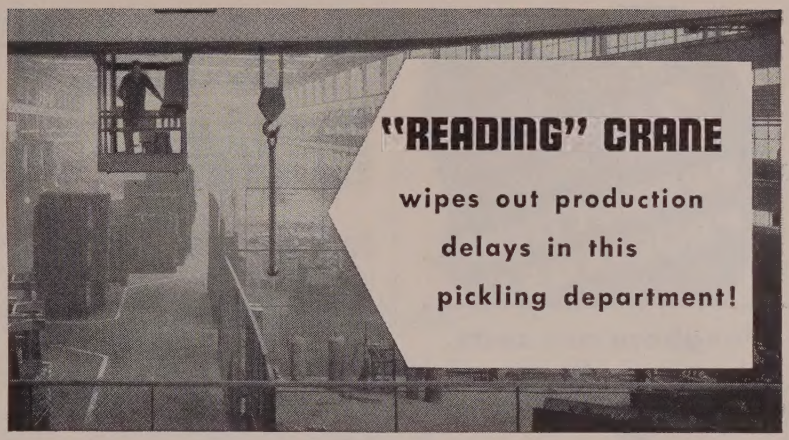

A prominent producer of automobile frames found production slipping. Figuring it was due to inefficient load handling equipment in his pickling room, he called in a "Reading" handling engineer.

After installing a 10-ton "Reading" overhead traveling crane he found his problem solved. Now the operator simply pushes a button. The motorized crane, traveling 400 feet per minute, does all the work. Employee morale is higher because fatigue is eliminated. And the extra efficiency obtained resulted in improved production.

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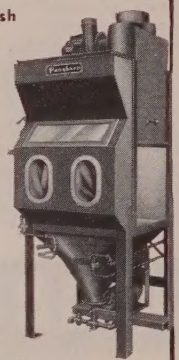

Pangborn Hydro-Finish Cabinet—Removes scale and directional grinding lines . . . holds tolerances to .0001" and prepares surfaces for painting or plating. Liquid blast reduces costly hand cleaning and finishing of molds, dies, tools, etc. Models from . . . **$1410** and up.

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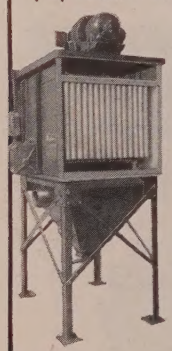

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Write for details on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment

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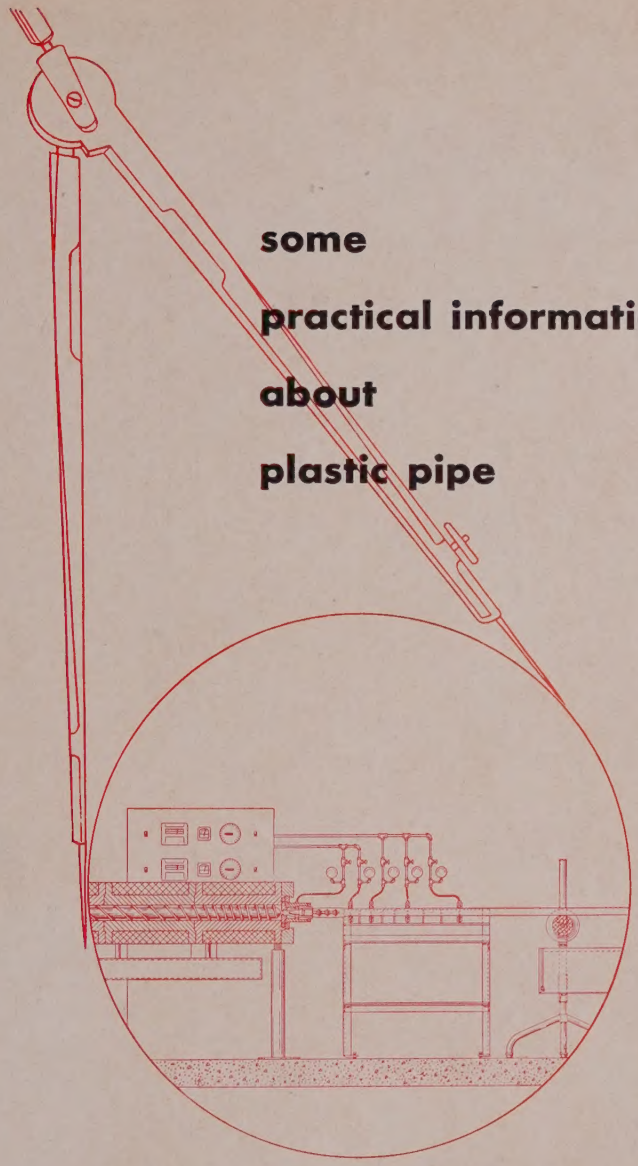
some practical information about plastic pipe



● In a plastic process unit you have these basic elements: ctrusion; sizing; stress-relieving; cooling; cutting to length; ispection and packaging. In addition, there is also a reclaim- g unit for rejected pipe.

Above you see an illustration of the heart of the plastic ipe processing unit . . . extruder with its die, sizing rings and ke-off equipment. Herein lies the success or failure of the nished product.

To make plastic pipe, either rigid or flexible, you start ith a choice of basic plastics. Today, there are several cepted basics, such as: modified polystyrene; butyrate; poly- hylene and either rigid or semi-rigid polyvinyl chloride. Each of these plastics has specific qualities and individual characteristics. The type you use depends upon the end use to which the finished pipe is to be put.

We have been working with plastics and plastic pipe, and rubber, for many, many years. Our Extruders have produced many miles of plastic pipe. We can give you practical help in setting up either the basic process or the complete plant, designing and building the equipment. Before you undertake your plastic pipe project, consult with the people who know the business.

YOUR INQUIRY — If you want to be in the plastic pipe business, we can help you. A letter of inquiry will receive prompt and confidential attention.

National Erie products for the Plastic and Rubber Industries • Extruders • Simplex Doors for Autoclaves • Mills and Hydraulic Presses.

This old and well-known line of machinery was acquired March 1, 1952, by The Aetna-Standard Engineering Company. They are manufactured in their Warren, Ohio and Ellwood City, Pa., plants. The sales and engineering of the National Erie line is the responsibility of Hale and Kullgren, Inc., Akron, Ohio.

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P. O. BOX 1231 · AKRON, OHIO

MANUFACTURING by

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THE AETNA-STANDARD ENGINEERING CO.
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Plants in Warren, Ohio
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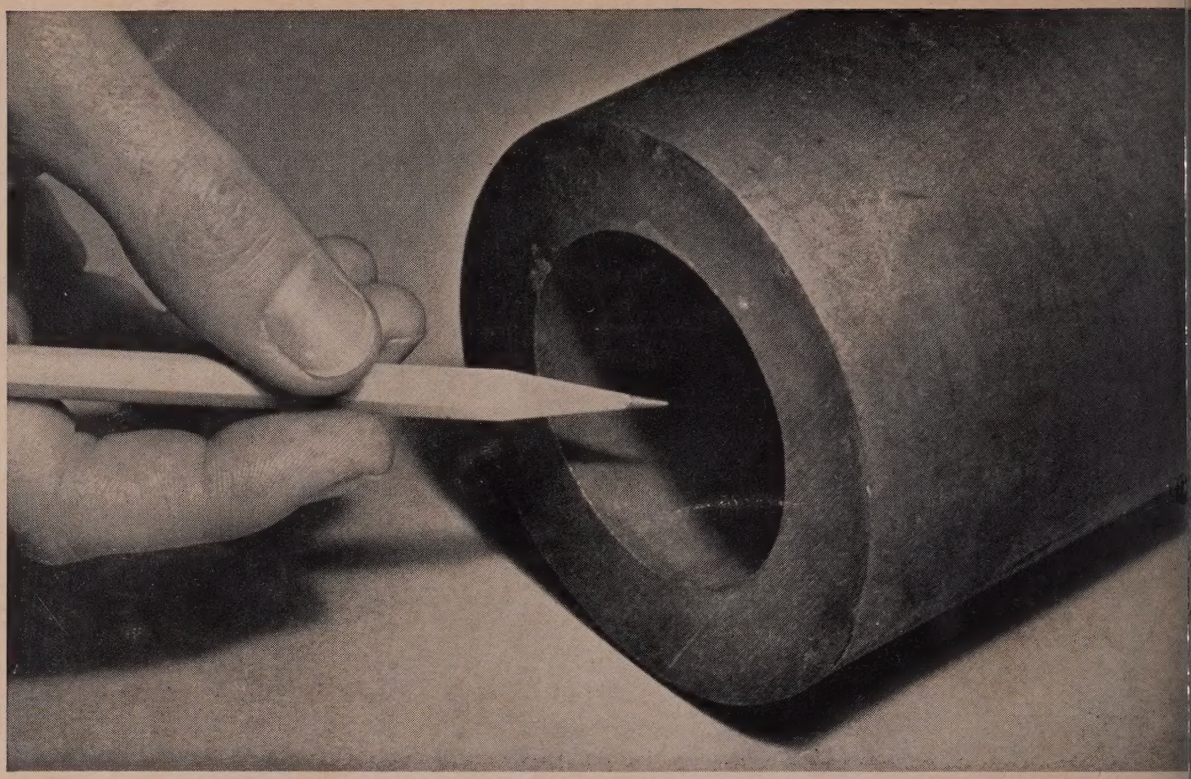

If you make hollow parts, here's where you can save steel and machining time

THE hole is already there when you use Timken® seamless tubing. Often, you can go right into finish boring as your first production step. You save machining time. Screw machine stations can be released for other operations. You get added machine capacity without additional machines.

By using Timken seamless tubing in place of bar stock, you save steel, too. Scrap loss is cut. You get more parts per ton of steel. And to help you save even *more* steel, the Timken Company offers a tube engineering service which recommends the most economical tube size for your job—guaranteed to clean up your finished dimensions.

Timken seamless tubing gives you high intern quality because the piercing process by which it made is basically a forging operation. Result: a unifor spiral grain flow for greater strength and a refine grain structure which brings out the best quality of th metal. And the Timken Company's rigid control keep this quality uniform from tube to tube and heat to hea The Timken Roller Bearing Company, Steel and Tub Division, Canton 6, Ohio. Cable address: "TIMROSCO"

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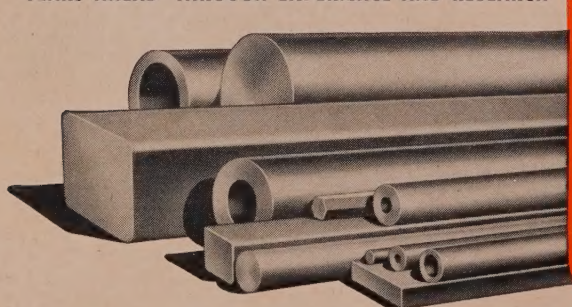

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